DOCUMENT RESUME

ED 137 497 95 CE 009 447

TITLE	Performance Based Instruction Curriculum Development in Vocational Education. The State-of-the-Art.
INSTITUTION	Alabama State Dept. of Education, Montgomery. Div. of Vocational Education and Community Colleges.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	Jun 75
NOTE	75p.; For a related document see CE 009 448
EDRS PRICE	MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS	Career Education; *Concept Formation; *Curriculum Development; Educational Accountability; *Educational Planning; Educational Research; Elementary Secondary Education; National Programs; Networks; *Performance Based Education; Post Secondary Education; Research Projects; State of the Art Reviews; *Technical Education; *Vocational Education
IDENTIFIERS	*Alabama; Michigan; United States

ABSTRACT

This review, based on a variety of information sources, discusses vocational education under the following major headings: Forces Contributing to Curriculum Change in Vocational Education (summarizes four of the major elements which seem to be contributing to rapid change in vocational education--knowledge explosion, rise of technology, change in the structure of thinking induced by cybernetics, and rise of the concept of accountability--and describes some major research efforts in developing curricula to cope with change); The Concept of Curriculum Responds to Change (discusses the variety of meanings for the term "curriculum" and factors contributing to the alteration of curriculum theory); The Development of Performance/Competency Based Education; Performance Based Education in Alabama; Related Research Assisting Performance Based Teacher Education Development in Alabama; Performance Based Certification for Educational Personnel Research Projects in Curriculum Development in Vocational Education (describes the Vocational-Technical Education Consortium of States (V-TECS) and Developing Educational Learning through Task Analysis (DELTA), and their activities); The Development of the National Network for Curriculum Coordination in Vocational-Technical Education; Career Education and Curriculum Development; Educational Planning--The 1202 Commission (discusses the activities and duties of this Alabama commission, established as a result of Congress request that a State commission be formed to administer the various provisions of P.L. 92-318, title XII, section 1202, Education Amendments of 1972); Placement for Accountability; Accountability; Accountability--An Examination of One Plan (examines Michigan's Accountability Model); Curricula in Vocational Education--Alabama State Department of Education; and Implications of the State-of-the-Art. (SH)

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ED137497

PERFORMANCE BASED INSTRUCTION CURRICULUM DEVELOPMENT IN VOCATIONAL EDUCATION

THE STATE-OF-THE-ART

Prepared for the
Division of Vocational Education and Community Colleges
Alabama State Department of Education
in preparation for a
Series of EPDA Workshops
June, 1975

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CE 009 447

This document was produced pursuant to a grant from the U.S. Office of Education under Part F, Education Professions Development Act. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Foreword

The methodology employed for conducting this State-of-the-Art publication included:

1. Initiating an ERIC Search
2. Reviewing books, periodicals, and unpublished research materials
3. Writing letters to deans of education of the thirteen higher education institutions preparing Alabama vocational teachers
4. Writing letters to major national efforts regarding research and development activities in performance based education
5. Reviewing the interim and final reports of the First Year Teacher Projects
6. Writing letters to fifty representatives of the National Network for Curriculum Coordination in Vocational-Technical Education requesting information on developments in vocational education relating to task analysis, performance objectives, modules (LAPS) development, and/or performance (competency) based education
7. Interviewing all state supervisors of vocational education in the State of Alabama
8. Reviewing curriculum materials in all vocational service areas prepared by the State of Alabama

Acknowledgments

Appreciation should be expressed to Dr. S. Douglas Patterson, Director, Research Coordinating Unit, for assistance in providing research materials for this publication. Dr. John E. Deloney, Deputy Director, Alabama 1202 Postsecondary Commission, has offered advice and assistance in the preparation of the State-of-the- Art. Mr. Tom Roberson, Coordinator of the EPDA Project, has provided valuable assistance in editing and rewriting of the manuscript. Mrs. Nell Markham has been patient and considerate in typing and retyping the manuscript. Mrs. Jane Hooker designed the cover and worked diligently in preparing the publication for the publishers. Mrs. Clara Birchfield prepared the manuscript for the printer. Mr. William E. Parrish prepared the drawings for the figures.

Special appreciation should be expressed to Miss Ruth Stovall, Branch Director of the Program Services Branch and EPDA Coordinator for the State of Alabama, for her encouragement and insight in the major research efforts which undergird the development of performance based instruction. Her leadership is evident throughout the publication.

Dr. T. L. Faulkner, State Director of the Division of Vocational Education and Community Colleges, is to be complimented on his insight and leadership in visualizing the direction that vocational education must assume in order to cope with the elements presented in the State-of-the-Art. It has been through his leadership that the Division has embarked on the in-service education efforts in order that the State of Alabama might move to the forefront in providing vital and relevant services to the Citizens of Alabama.

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Forces Contributing to Curriculum Changes in Vocational Education

This paper attempts to summarize four of the major elements which seem to be contributing to rapid change in vocational education and to describe some major research efforts in developing curricula to cope with change. The literature attributes the rapid change in vocational education to the knowledge explosion described by Robb[1] "as a knowledge explosion that 'boggles the mind' (and that) involves a doubling of general information every fifteen years or so and a doubling of scientific knowledge every decade. It is a staggering fact that nearly 3,000 pages of print are being produced per minute in this country alone". This production of information produces situations in which it is extremely difficult to become knowledgeable of the phenomenal amounts of available information.

To handle the information, whole new systems have been devised to assist researchers in locating and summarizing materials relevant to the topics studied. One such system is the ERIC QUERY.[2] To provide a national educational information system the U.S. Office of Education has developed the Educational Resources Information Center (ERIC) system. This system provides a summarization of articles from *Research in Education*, a monthly abstract journal reporting research reports and related documents of educational significance;*Current Index to Journals in Journals in Education*, a monthly guide to periodical literature covering over 500 educational and related journals; and *Abstracts of Instructional Materials in Vocational and Technical Education, and Abstracts of Research Materials in Vocational and Technical Education*. Articles from these publications are photographed, placed on microfiche, and placed in libraries. Abstracts of the materials are computerized and indexed by subject, author, and institution. The concepts in the article or study are placed in a *Thesaurus of Descriptive Terms*. A researcher who wishes to summarize the research in a given area can place the concepts he is wishing to research into the computer and the computer, after relating all possible combinations, provides a print-out of the abstracts of all articles relating to the concepts. After reviewing the abstracts, copies of the microfiche can be obtained for reading and study. Thousands of articles can be obtained and studied in a very short time.

Such programming of information has ramifications for all segments of education. For many years, educational researchers have had to conduct manual searches of literature for

information. Large universities have utilized graduate students to summarize research materials. Hundreds of thousands of documents can now be researched in a few moments. The computerization of information does not provide, however, for a delivery system to get the information into the hands of potential users. For generations, education has consisted of supplying information to pupils. Rapid change and the knowledge explosion makes much of the information obsolete even while the information is being obtained. Education will have to devise systems in which researched information can become available so that pupils, teachers, and the public can utilize the results. This will call for wholly new approaches to curriculum and curricula design in both academic and vocational education.

The second element contributing to rapid change is the rise of technology. Just as man has begun to utilize technology to control the knowledge explosion, the technology has produced a change in man. Man has become dependent upon that technology. Smith[3] describes man's reliance on technology:

> Moreover, the world has become dependent on technology. Every aspect of our lives is influenced by a machine or an electronic device. If our automobile breaks down, we can't get to work. If our telephone fails, we are unable to communicate with those vital to our lives. If electric power fails, we are unable to obtain necessary information or our milk sours. Modern American man could not survive if suddenly deprived of his technological supports. A city would starve if no mechanical devices were available to it.

With this type of dependence upon technology, it is extremely important that technicians be trained to supply the services that the technology demands. Moreover, technology has a way of increasing at an ever rapid rate, causing displacement problems in the labor force as new technology requires retraining. Workers who have suddenly been displaced need counseling and advising relative to mental, physical and emotional factors involved in change. Evidence is mounting that workers must be trained several times in order to continue with career development during their lifetime. The importance of career development is emphasized in elementary schools as pupils become exposed to career awareness and career exploratory experiences for effective decision making regarding possible careers in working or living.

In fact, it is possible that the ultimate end of technology is automation. Isaacson[4] characterizes automation as:

> Technically, the term automation refers to the automatic, centralized control of an integrated production system. Faunce[5] suggests that there are four basic components in the production process in which human activity or input must be replaced by machine input in order to have automation. These include power technology, processing technology, materials-handling technology, and control. The first of these deals with the source of energy applied to the production process, the second refers to the tools and techniques used in the actual operation performed upon the raw materials, the third relates to the ways in which materials are moved from one process operation to another, and the fourth factor is concerned with the regulation of quality and quantity of output.
>
> Technological progress in these four components occurs in two steps. First, some means of replacing human participation in the step is developed, and second, the efficiency of the substitute system is increased. Technological advancement must occur in each of the four

components before any one phase can advance very far. In other words, a certain sophistication in the use of power is a prerequisite to sophistication in the other areas. These in turn must develop to keep pace with the power available before it is feasible to apply a more complex power technology. With the application of mechanical or electrical power, it becomes possible to use higher processing machines, which are served by conveyor belts or other transfer equipment, and controlled mechanically. This development progresses in a spiral fashion toward less human input and control, ultimately reaching the level of AUTOMATION.

Faunce states that there are three developmental phases in the movement toward automation. The first phase is the handicraft stage that exists before the applciation of technological change. In the second period mechanized power and processing operations occur. In the third and final phase highly developed materials handling procedures and automatic production control are used. The unique characterization of the third stage is the linking together of the various process steps into a continuous and automatic system. Various industries progress through these three stages at different rates. For example, the manufacture of textiles in the United States moved rapidly from the craft to the mechanized stage but it still has not moved on to the automated stage. On the other hand, oil refining and electrical power generation are examples of industries that are well advanced in the third stage.

Faunce goes on to list the industries that are in beginning mechanization, advanced mechanization, beginning automation, and advanced automation.[6] The industries listed employed 75% of the civilian work forces in 1964. Approximately ninety per cent of the civilian work force were in occupations that were in the beginning and advanced states of mechanization. The fastest growing segment of the work force appeared to be "services". The need for vocational training relative to the mechanization of industry and the rise of service occupations is obvious, and, as industry moves rapidly through the stages described by Faunce, the need for further training and retraining will become greater. Hodgkinson[7] describes the work of vocational education as it relates to the rising of technology:

.....we must make some drastic changes in how we train people for work. Increasingly, we will run the risk of training people for jobs which, by the time training is completed, will no longer exist. Men will no longer have a one-job career; the prevalent pattern will be a succession of jobs, with intensive retraining after each. Vocational education will become a lifelong thing; people will no longer say that they have finished school. The consequences of cybernation will affect all areas of the occupational world: the farmhand replaced by the automatic milking machine lines up with the miner displaced by the electric shovel, the machinist by the automated lathe, the white-collar worker by the electric salesgirl and (in a couple of years) by the electric secretary, who can type directly from dictation with no mistakes and file everything perfectly; the linotype operator by the automatic typesetter; and even in the professions, the lawyer and doctor are finding some of their functions limited by computers (searching the medical or legal literature for precedents, for example).

The technological revolution has also produced a revolution in the way men think. It has produced a new method of thinking that has been titled CYBERNETICS. Cybernetics is defined in the dictionary as "the comparative study of complex calculating machines and the human nervous system in order to understand better the functioning of the human brain." Basic to the development of cybernetics is the concept of self-regulation or feedback in order

that adjustments might be made in any function. "The self regulation of systems has been a major factor in new thinking in a variety of areas from communication theory to biology and anthropology"[8]. That the effect of cybernetics would be felt in education was almost inevitable. The term that describes the self regulation is "systems analysis". The term is defined by LeBaron[9] as follows:

> Systems analysis is a general term for the application of scientific thinking to large-scale problems. The phrase has been used indiscriminately to mean the analysis of information for computer programing, the development of planned management activities, or simply the orderly relation of two or more things to ideas.
>
> There is no single method of systems analysis, and it is not solely the product of our computer age; indeed, its history in one sense goes back at least to Aristotle. What is new is a concentration on the quantifiable aspects of analysis (to the extent that this is possible) and on the isolation and control of numerous variables made possible by computers. This has led to a revolution in our thinking about the nature, organization, and use of information, so that at the heart of systems procedures there now exists a philosophy of information.
>
> The word SYSTEM communicates many different ideas, but in the present context it indicates a concentration on process. In briefest form, then, by SYSTEMS ANALYSIS, I mean an orderly process for (1) defining and describing a universe of interest and the significant factors and their interrelationships within that universe, and (2) determining what changes in the universe will cause a desired effect. Beginning with the broadest statement of the universe, these procedures permit the analyst to isolate and define parts of the system according to their functions and then to note the interrelationships among these functions.

LeBaron[10] presents the steps of systems analysis as follows:

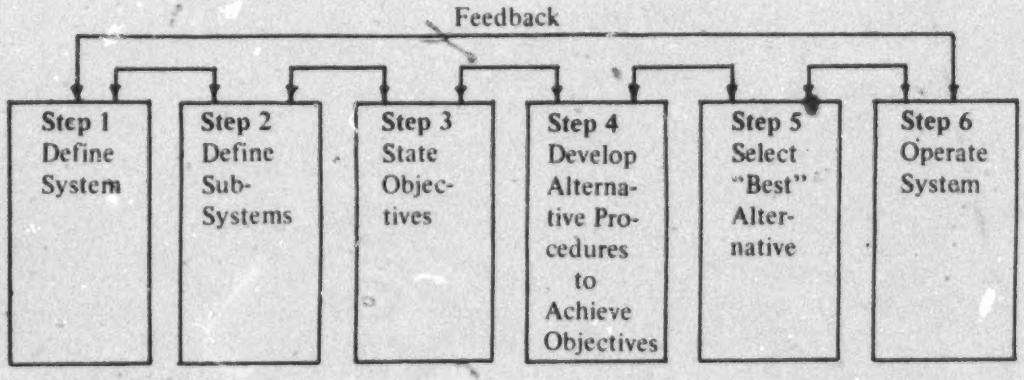

Feedback
Step 1 Define System
Step 2 Define Sub-Systems
Step 3 State Objec-tives
Step 4 Develop Alterna-tive Pro-cedures to Achieve Objectives
Step 5 Select "Best" Alter-native
Step 6 Operate System

Figure 1

The systems analysis approach to the solving of educational problems has spawned a whole series of new curricula approaches and new approaches to administrative techniques. The literature describes these approaches as management by objectives; utilization of the systems design for the improvement of educational systems; and, utilization of the systems approach to teaching and learning.

The development of the systems approach to educational problems was timely with the appearance of the concept of "accountability". The accountability movement in education arose over the fact that "tax payers were no longer willing to put their trust blindly in education; fewer than half the school finance referenda were passing."[11] In addition the federal and state governments were requesting that educational dollars be accounted for in terms of the product the dollars were generating. Lessinger[12] explains the concept of accountability:

> Accountability is a Biblical concept: We must answer for our stewardship on earth to God. It also is a classical concept in business and industry. There, accountability is expressed in terms of success in achieving profit. Starting in 1969 in the administration of the bilingual and dropout prevention titles of the Federal Elementary and Secondary Education Act, accountability in education came to mean (1) the continuing assessment of the educational achievement of pupils in a school system; (2) the relating of levels of achievement attained to the State's and community's educational goals and expectations, to the resources allocated to the schools, and to the techniques professionally employed for facilitating learning; and (3) the full dissemination of the findings and analysis to the parents, teachers, taxpayers, and citizens of the community.
>
> The concept establishes as public policy three basic rights. First, each child has a right to be taught what he needs to know to take a productive and rewarding part in our society. Second, the taxpayer and his elected representatives have a right to know what educational results are produced by a given expenditure for education. And third, the schools have a right to draw on talent, enterprise, and technology from all sectors of society.

The concept of accountability will continue in education for some time and the concept will require that educational programs provide the functions and products which are desired. Every segment of education must evaluate the product that it is producing and design systems for feedback for improving the system.

The four major elements which seem to be creating changes in vocational education,

- the knowledge explosion and the efforts to manage the information produced
- the rise of technology
- the change in the structure of thinking induced by cybernetics
- the rise of the concept of accountability,

all require curriculum change. Curriculum is a concept that must be redefined if vocational and academic education are to respond to the four major elements described.

The Concept of Curriculum Responds to Change

Curriculum has a variety of meanings for particular groups of people. Parents tend to think of curriculum as what the child studies in school. Legislators often regard curriculum as the educational program of the state. Teachers tend to regard curriculum, in the State of Alabama, as the *State Course of Study*. This *Course of Study* was discontinued in the Division of Instruction of the Alabama State Department of Education in the middle sixties. Risk[13] defines curriculum as perceived by school administrators:

> The traditional definition accepted by school administrators may be stated as follows: a curriculum consists of a systematic arrangement of courses or subjects designed to meet the needs of a particular group of students. Two examples would be college preparatory curriculum and the commercial curriculum.

There are probably school administrators in Alabama who still subscribe to this view of the curriculum. However, Risk adds:

> A more recent definition, now quite generally accepted, is that a curriculum consists of all the planned or supervised experiences of students under the direction of the school. Thus defined, curriculum includes both classroom and extra-classroom activities. Under this interpretation curriculum-making involves considerably more than the selection and arrangement of course offerings. It includes such problems as (1) the selection of objectives, subject-matter content, instructional media, and student learning experiences, (2) the organization of the sequence of courses or the integration of student experiences in various areas of learning, and (3) the preparation of courses of study.

This is a very broad definition and implies that curriculum includes nearly every aspect of teaching and learning. The development and implemeniation of curriculum has become the prerogative of the instructor, because only the instructor can adapt the curriculum to the pupils. Saylor and Alexander[14] present the role of the teacher or instructor in relation to curriculum planning.

> To summarize our point of view, we believe curriculum decisions should be made by those most directly involved in the planning and carrying out of learning activities for pupils:

> teachers, school administrators, boards of education, and parents. These participants in planning should be familiar with the views of national leaders who have established themselves as insightful and scholarly authorities on education. They should study research, evaluate experiments, judge innovations, read reports of organizations, examine projects sponsored by foundations, and in any other feasible ways become knowledgeable on educational matters, but those directly involved in the operation of schools in the community should make the decisions necessary for the education of the children of that social group.

This definition of curriculum, which includes nearly every aspect of teaching and learning, requires skills that are almost an impossible task for the teacher. The knowledge explosion with subsequent information regarding research and innovation in education cannot be assimilated by teachers who have full-time jobs. Teachers simply do not have the time to do the reading and research inherent in curriculum planning.

Because curriculum has been the prerogative of teachers, change in curriculum is a slow process, even if courses of study (outlines of what are to be taught) are provided. Miel[15] speaks of changing curriculum:

> The fact that course-of-study preparation is still the most common activity in the field of curriculum development shows that the full implications of the new definition of the curriculum are not as yet grasped by any great number of people. If it is true that the curriculum is composed of the experiences children undergo, it follows as a corollary that the curriculum is the result of interaction of a complex of factors, including the physical environment and the desires, beliefs, knowledge, attitudes, and skills of the persons served by and serving the school; namely, the learners, community adults, and educators (not forgetting the custodians, clerks, secretaries, and other "non-teaching" employees of the school).
>
> If this corollary is studied carefully it will be seen that curriculum change is something much more subtle than revising statements written down on paper. To change the curriculum of the school is to change the factors interacting to shape that curriculum. In each instance this means bringing about changes in people - in their desires, beliefs, and attitudes, in their knowledge and skill. Even changes in the physical environment, to the extent that they can be made at all, are dependent upon changes in the persons who have some control over that environment. In short, the nature of curriculum change should be seen for what it really is - a type of social change, change in people, not mere change on paper.

Miel's observations regarding the development and utilization of curricula is still regarded as valid. Since curriculum is the prerogative of the individual teacher, the standard procedure utilized by curriculum specialists in the development of the curriculum has been to utilize those persons who would eventually use the curriculum to develop the curriculum. In fact, some educational authorities have indicated that the greater the involvement in curriculum development, the greater the utilization of the curriculum materials.

However, the time that it takes to innovate in the schools in terms of curriculum change, utilizing the process outlined by Miel, has been estimated to be years. Some literature indicates that it takes fifty years to get an innovation in the schools. Obviously, in terms of

technological process, knowledge explosion and cybernetics, education cannot wait that long to respond to the concept of accountability. New approaches to curriculum theory must be developed if curriculum change is to keep pace with technological developments in the society. Taba[16] criticized curriculum theory.

> Decisions leading to changes in curriculum organization have been made largely by pressure, by hunches, or in terms of expediency instead of being based on clear-cut theoretical consideration or tested knowledge. The scope of the curriculum has been extended vastly without an adequate consideration of the consequences of this extension on sequence or cumulative learning. The order in which subjects are taught has been shifted. All this has been done without fundamental reconsideration of the assumptions underlying the classical curriculum. The result has been to make the curriculum, especially that of the high school, an unmanageable, over-crowded hodge-podge, an atomistic cafeteria table of offerings, and to play havoc with whatever sequence the traditional subjects represented and achieved.
>
> The fact that these perplexities underlying curriculum change have not been studied adequately may account for the proliferation of "approaches" to curriculum making. In effect, the state of curriculum theory can be compared to the state of biology in the pre-Darwin days, as described by Beck: a careful classification of all false starts, because no fundamental theoretical idea is present to pull it all together. The consequence of this difficulty (intricacies which make proof difficult) has been "the proliferation of countless schools of thought - those opinion-holding factions whose outward appearance in many cases suggests nothing quite so much as a frescoed mural depicting a struggle."[17]

Taba suggests that curriculum should be reordered in terms of ideas, beginning with specific facts and processes, moving to basic ideas, presenting concepts, and then relating to thought systems. In terms of this basic curriculum design, she then advocates the forming of behavioral objectives to measure the levels of knowledge in the curriculum. However, the practice of building curriculum from the top-down, would be inverted by developing the curriculum from the instructional units of teachers. Therefore, the design of the curriculum would still be at the discretion of the teachers, utilizing the general design of the sequencing of the ideational structure. Taba's suggestions, however, mark the beginning of a change in curriculum theory so that practical application can produce curriculum that is relevant to the needs of pupils and to the needs of society.

The change in theory of curriculum has altered in such a manner as to supply (1) a framework delineating the curriculum and (2) a structure that would permit the teacher to be involved in curriculum development to the extent that the curricula could be adapted for individual pupils. Meyen[18] describes the structure:

> The term curriculum is frequently defined as the courses offered; the overall experience provided a child by the school; the program included in a particular subject matter field; or in some cases, the sum total of experiences afforded school age children regardless of school sponsorship. The global nature of such definitions tends to confound the real differences reflected in the many definitions ascribed to curriculum. To merely talk about what occurs in an educational setting as being the curriculum implies that there is little order or planning involved in curriculum. As one reads the literature on curriculum, it becomes apparent that while the term curriculum is complex, and the decision-making which results in structuring

of the curriculum is by no means arbitrary.

It also becomes apparent that there are differing views on the relationship of instruction as implemented in the classroom by the teacher to curriculum. Some writers take a comprehensive perspective of curriculum and subsume instruction inclusive of methods under the label of curriculum along with the specification of content. Others view curriculum as representing the input into instructional program. This view suggests that given the input the teacher may select those methods which work best for him in teaching the curriculum. In other words, the curriculum may be somewhat standardized but the instructional programs will vary by virtue of the different methods employed by teachers.

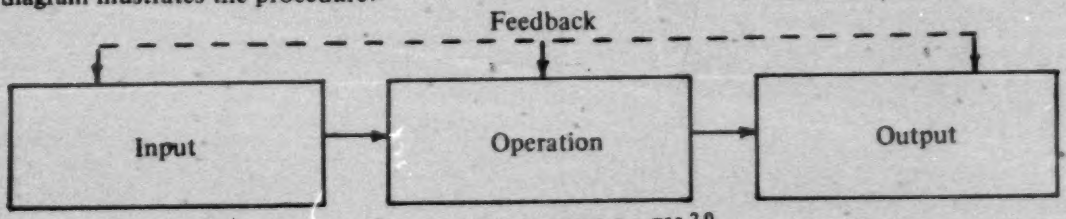
Differentiating curriculum from instruction makes it somewhat easier for the teacher to identify his role in the educational process. While he has a role to play in the development of curriculum, as well as in implementing the curriculum through the instructional program, he may frequently find himself in a situation in which he is asked to carry out an instructional program compatible with a curriculum which he has played a minimal role in developing.

The curriculum should provide the objectives and offer a basic design for the instructional program. However, the teacher should be free to employ those methods which work best for him in accommodating the curriculum. The methods he uses will also entail the teaching of content in addition to that specified in the curriculum. This occurs as the teacher plans experiences which will allow the student to learn prescribed skills, concepts, and information.

Teachers will find it necessary to couch the teaching of certain aspects of the curriculum in content relevant to the learner but which is beyond the basic requirements of the curriculum. For example, information on sports, orientation to specific job opportunities, or experiences related to something unique to a child's development.

For the most part, the teacher has responsibility for the instructional program. While the curriculum specified the outcomes which he should strive for with the pupils, he is generally free to use methods of his choice and to select a major portion of the supplemental instructional materials.

Basically, this view of curriculum utilizes the systems approach to curriculum. Lembo[19] provides insight into the movement toward educational systems approaches when he states that an instructional model should meet three conditions: diagnostic, prescriptive, and normative. If the curriculum model of Meyen is combined with the model of Lembo the following model for both curriculum and instruction, which further illustrates the role of the instructor in the development of instructional systems, can be constructed. The following diagram illustrates the procedure:



SYSTEMIC APPROACH[20]

The output suggests that there are certain objectives which are prescribed in the instruction. These are the objectives described by Meyen. The input refers to the entry level behavior at any point in time in relation to the behavior. The operation can be described as the process that one utilizes to move from the input to the output. The feedback system allows for evaluation procedures in order to ascertain whether the system has produced the desired product. If the system has failed to reach the output level, then that portion of the system which is faulty can be redesigned in order to reach the desired output. The operation and feedback portion of the system remain the prerogative of the teacher.

In the model that is proposed by Meyen, the output in the form of performance (behavioral) objectives is prescribed. However the input, or the relating to the needs of the pupils, and the operation, relating to the instructional procedures designed to attain the performance, becomes the responsibility of the teacher.

The same systems approach can be related to the diagnostic, prescriptive, and normative model of Lembo. For example, if the teacher is having difficulty in determining whether the pupil can meet the output (objective) then the teacher must make a diagnosis, prescribe an enabling objective, develop an instructional activity to enable the student to achieve the objective, and monitor whether learning has taken place. For example, if the student is attempting to mount an electrical box on the wall and the teacher has assembled an instructional activity to reach the objective, and five students out of fifteen cannot reach the objective, then the teacher should diagnose the problem of each student. If the problem is that one student cannot read the instructions, then the teacher should, on the basis of the diagnosis, prescribe other learning operations in order to arrive at the performance objective. An alternate learning experience might involve the construction and utilization of an audio tape that can enable the pupil to learn.

In terms of technology, the need for managing information and coping with cybernetics, the systems analysis approach to instructional systems has contributed to the alteration of curriculum theory. The movement toward the establishing of behavioral objectives for pupils originated in the 1960's. The objectives, however, were primarily knowledge (cognitive) objectives rather than performance (psychomotor, affective) objectives. There is another movement which originated in this same period that encouraged the development of the systems approach in education and toward performance objectives. This movement was the conceptualization of performance based teacher education, often referred to as competency based teacher education.

The Development of Performance/Competency Based Education

Concerned with the rise of technology, cybernetics, and increasing urbanization with attendant social problems, including dissatisfaction with the training of teachers, the U.S. Office of Education issued a request in October, 1967, for proposals to submit "Educational Specifications for a Comprehensive Undergraduate and In-service Teacher Education Program for Elementary Teachers".[21] Elementary was defined as including preschool, primary, and intermediate ages. The request for proposals also indicated that a systems analysis approach should be used in developing the specifications. The specifications should also develop alternate teacher training programs developed in sufficient detail to enable ready development into operating programs for implementation by teacher training institutions.[22]

Eighty proposals were received and nine were funded for approximately one and one-half million dollars. Those institutions receiving funding for proposals were the Universities of Florida State, Georgia, Massachusetts, Michigan State, Pittsburg, Syracuse, Toledo, Teachers College, Columbia, and the Northwest Regional Educational Laboratory. The University of Wisconsin was not funded but developed a research project at the University's expense. The specifications for the teacher education programs were completed October 31, 1968.

Eight institutions were funded to conduct feasibility studies related to developing, implementing, and operating model training programs. The feasibility studies were completed in January, 1970, and the cost for making the programs operational was estimated at 114 million dollars over a five year period.[23] Such a large sum of money was not feasible, so several developmental approaches were planned. One developmental approach of the U. S. Office of Education was to provide small sums of money to several "developing institutions" to encourage the development of teacher education programs which had by this time received the title "performance based teacher education." (It also is called "competency based teacher education". For all practical purposes the two terms are considered synonymous[24]). Ten small southern colleges were selected to receive small sums of money to plan, develop and implement performance based programs based on the teacher education models. These colleges were Norfolk State, Clark College (Atlanta), Jarvis Christian, North Carolina Central University, Shaw University, South Carolina State, Florida A & M University, Tennessee State, Xavier University, and Livingston University (Alabama). The colleges banded together and

named themselves *The Consortium of Southern Colleges for Teacher Education.* A consortium was established so that the colleges could share materials and expertise.

Two of the Universities in the consortium had made sufficient progress in pioneering performance based teacher education programs to have their programs described and published in 1972. They were Livingston University (Alabama) and Florida A & M University.[25] Pembroke State University, Prairie View A & M University and the University of South Alabama became affiliated with the Consortium in 1972. By 1973 all of these institutions had created plans for conversion or were in the process of implementing performance based teacher education programs.(PBTE)[26]

The growth of performance based teacher education as an innovation was rapid. In 1973 Schmieder [27] lists ten colleges as total "competency based" and 80 institutions as having alternative or parallel teacher education programs. In 1973, 17 states had given legislative and/or administrative support for performance based certification. An additional 28 states were studying the concept. An American Association of Colleges for Teacher Education questionnaire (1972) showed that of 783 institutions of higher education reporting, nearly 500 had PBTE programs or were in the process of developing PBTE programs.[28] Only 228 institutions indicated that they were not involved in PBTE at the present.

It was in 1973 that the title "Performance Based Education" (as opposed to Performance Based Teacher Education) came into being. Schmieder[29] indicates that the performance based concept had been incorporated in schools in Broward, Dade, and Palm Beach Counties in Florida, and in the Houston School District, Texas and to some extent in schools in Albany, N.Y.; Athens, Georgia; Atlanta, Georgia; Buffalo, N.Y.; Emporia, Kansas; Oakland, California; Pueblo, Colorado; Schenectady, N.Y.; and Tallahassee, Florida. The liberal arts were also involved, e.g., art, Maryland Institute of Art; music, Marymount College; social studies, Illinois State University; language arts, Columbia Teachers College; mathematics, University of Alberta; science, University of Georgia; industrial arts, Wayne State University; Library-media, School Library Manpower Project; and the Ohio State Center for Vocational and Technical Education for vocational education.

In addition to the Ohio State Center, which is encouraging the development of PBE in vocational education, and the Consortium of Southern Colleges, which encourages development in small colleges, Schmieder[30] lists eight other groups that assist in the development of PBE.

1. The National Commission on PBE was funded by the Rockefeller Foundation to assist on major problems of research and development. Headed by Dr. Fred McDonald of Educational Testing Service this group, in conjunction with U.S.O.E., has developed and field tested a competency examination for trade and industrial education teachers. This group is also devising a new teachers examination to replace the National Teachers Examination. McDonald[31] describes the plans of the Commission:

   (Our goals are) within five years to have created five models of institutions-institutions where the entire teacher-education program is committed to a performance based structure

and represents a distinctive concept of how such a program ought to be organized and what its components ought to be.... To reach such a goal we need to stimulate development of a taxonomy of teaching behavior, and the development of instructional systems, evaluation systems and management systems. We have chosen to begin by attacking the most urgent of the problems....The Commissions first two task forces will be designed to work on two basic concerns. A task force will be created to begin the development of a taxonomy of teaching behaviors with all the precise description of behavior and methods of measuring the behavior implied in the concept of a taxonomy. A second task force will be set up to develop training programs for managers of performance based systems. We hope to secure finding for these two programs and to begin work on them in the immediate future.

2. The Commission on Performance Based Teacher Education of the American Association of Colleges for Teacher Education encourages dialogue concerning the development and problems of performance based education.
3. The Multi-State Consortium on Performance-Based Teacher Education, assisting member states in developing performance based education and certificates, has offices in New York State.
4. The National Consortium of CBE Centers, provides developmental assistance to meet national priority needs and has offices at Florida State University.
5. The "Teacher Center" Leadership Training Institute, analyzing the major problems of CBTE programs and assisting in the development of materials that could be used in CBTE programs, is located at the University of South Florida.
6. The Committee on National Program Priorities in Teacher Education, Task Force '72 "Outside Track", focusing on a national dialogue and feedback regarding the committee's proposed "five-year national program" for CBTE outlined in the *The Power of Competency Based Teacher Education*, was headed by the late Dr. Benjamin Rosner.
7. The School Library Manpower Project administers six experimental program models in competency-based,field-center approaches in school library-media education.
8. The National Center for the Improvement of Educational Systems/Teacher Corps provides high emphasis to leadership training, program development and installation of CBTE.

Elam[32] describes the essential elements of PBTE as:

Competencies (knowledge, skills, behaviors) to be demonstrated by the student are:

1. derived from explicit conceptions of teacher roles,
2. stated so as to make possible assessment of a student's behavior in relation to specific competencies, and
3. made public in advance.

Criteria to be employed in assessing competencies are:

1. based upon, and in harmony with, specified competencies,
2. explicit in stating expected levels of mastery under specified conditions, and
3. made public in advance.

Assessment of the student's competency:

1. uses his/her performance as the primary source of evidence

2. takes into account evidence of the student's knowledge relevant to planning for, analyzing, interpreting, or evaluating situations or behavior, and
3. strives for objectivity.

The student's rate of progress through the program is determined by demonstrated competency rather than by time or course completion.

The instructional program is intended to facilitate the development and evaluation of the student's achievement of competencies specified.

Several additional elements are related and desirable characteristics of PBTE programs. These include: (1) instruction is individualized and personalized; (2) the learning experience of the individual is guided by feedback; (3) the program as a whole is systematic; (4) emphasis is on exit, not on entrance requirements; (5) instruction is modularized; (6) the student is held accountable for performance.

The Center for Vocational and Technical Education (CVTE) has been involved in the development of performance based curricula for vocational teacher education. Much of the work at the Center has been concentrated in the research of Cotrell [33,34,35,36,37] and others. Utilizing occupational analysis for developing teacher competencies and task analysis techniques to identify performance requirements for teacher coordinators of cooperative programs, Cotrell identified the competencies relative to the various service areas. Finch, Hamilton, and Andreyka[38] summarized the research of Cotrell at a meeting of State Vocational Directors in 1974.

Cotrell developed his work in two phases: Phase I was to identify performance requirements of teachers in conventional programs in agriculture, business, distributive, health occupations, home economics, technical, and trade and industrial education. Finch et al. describe the procedures followed.

> Initially the Center staff conducted a literature search to identify work that had been done which would have a bearing upon the study. Next an occupational analysis of the competencies required by vocational teachers was conducted. Occupational analysis (introspection and interview) was conducted with a selected sample of professionals. Resource persons consisted of master teachers and teacher educators with experience in the teaching areas being studied. The analyses from the seven areas were then merged.
>
> As a result of the analysis, a preliminary list of 237 tasks was developed. These tasks were, through expert judgment, placed into ten categories. The categories included: Planning of Instruction; Execution of Instruction; Evaluation of Instruction; Management; Guidance; Public and Human Relations; Student Vocational Organization; Professional Role; General School Activities; and Coordination.
>
> Tasks were then examined and rated by a panel. The 21-member panel representing each of the seven services and 19 states was selected by the Center staff with recommendations from the USOE, Division of Vocational and Technical Education, and other leaders in the field. The group examined and rated the tasks and identified important common tasks across the seven service areas. Additionally, 226 of the 237 tasks were deemed important to the successful vocational teacher. The ten categories were confirmed as being relevant.

Next, a national survey of vocational teachers was conducted. Teachers were asked to identify incidents which were critical to their success. As a result of this survey, 30 tasks were added to the list giving a total of 256 competencies. One hundred and forty existing competencies were verified as being important to the successful teacher (Cotrell and others, 1971a, 1971b).

Phase II of the research project was concerned with the identification of performance requirements for teacher coordinators of cooperative programs in off-farm agricultural, office occupations, distributive, wage earning home economics, trade and industrial, and special needs education. A task analysis was again conducted after a literature search was made. This analysis was done on a small scale and involved Center staff and small groups of teachers. Based upon this analysis a preliminary list of teacher coordinator tasks was developed. It consisted of 385 tasks, including the ones identified in Phase I of the project.

At this point, 300 persons nominated by their respective state supervisors as outstanding teacher coordinators were chosen to examine and rate the tasks. Fifty persons from each of the aforementioned service areas were asked to rate them in terms of their importance to the successful teacher coordinator. Analysis of data revealed the important common and unique tasks by service area. All were deemed to be important common and unique tasks by service area. All were deemed to be important by the group and 92% of the tasks were of common importance across two or more service areas.

Next, a randomly selected sample of the 300 raters was brought to the Center for a review and clarification meeting. Twenty-nine outstanding teacher coordinators reviewed the various tasks and clarified ratings of them for the project staff at points where questions were raised. At this time, one of the tasks was eliminated. Next, the findings of Phase I and II were merged and a set of performance-oriented general objectives was developed. These objectives, which specified the task, general criteria, and general standards of performance, constitute a base for the development of teacher education curricula (Cotrell and others, 1972a, 1972b, 1972c).

Once the research was completed on the 384 competencies, curriculum materials were developed to implement the performance based curricula. The curriculum materials were developed as learning modules (sometimes called learning activities packets or individualized learning packages in other PBE programs). The modules (as of 1974, there were 118 under development) contained the following structure:

Table of Contents
Title Page
Introduction
Performance Objectives
Resource Materials
Learning Experiences (Note the plural form. PBE has inherent "alternate" learning experiences)
Module Supplement

The modules were cooperatively developed by practicing teachers and teacher educators. Module prototypes were constructed and tested at the University of Missouri and Oregon State University. CVTE sent Research and Development specialists to serve as liaison in the field testing procedure. Each of the 120 modules was subjected to eleven steps in development and revision. After the revisions the modules were tested in terms of formative and summative

evaluation at Temple University and the Pennsylvania Department of Education. Feedback from this system involves further revision from CVTE. A final aspect of the project deals with module psychometric refinement. Under subcontract with California Testing Bureau, a subsidiary of McGraw Hill, the modules will be checked for alignment (objectives, learning experiences, assessment) and, where needed, changes in assessment instruments will be made.

The modules are based on "performance objectives," provide alternate learning experiences and criterion measures for assessing the achievement of the objective. The modules are also sequenced so that they progress from the initial stage described by Finch et al. as:

> (the presentation of the new concept, attitude and/or skill), to the application stage (the simulation and/or role playing phase), and finally terminate in a "real world" setting-that is, the competency is performed in an actual school setting. At this point the learner is ready for the assessment of his/her teaching competency which the module was designed to develop.
>
> The activities of a learning experience may involve the learner in reading, viewing and/or listening to prescribed media or engaging in some form of teaching performance. In the margin to the left of each learning experience, a key action verb is provided to indicate to the learner the nature of the activity in which he/she will be involved. In some learning activities, the learner observes or participates in an educational event or activity. A particular interview, a private conference, or a seminar activity may also be included. Such activities assist the learner to attain the performance objectives for which the learning experience was designed.
>
> Feedback as a learning experience may come from a variety of sources, ranging from a self-test to feedback from peers, a resource person, or others who have observed the learner perform the competency. There may be a written test, provided with a key to facilitate a self-check, or a rating instrument which the learner or others use to evaluate the performance. The feedback materials provide objective checks for the learner as he progresses through the module. The learner is given clear directions as to how, when and where these checks are to be administered, along with the necessary materials and scoring keys.
>
> The last learning experience also serves as the assessment and may be defined as the process used to determine the learner's level of mastery of a set of objectives. Measurement may take place prior to or following the completion of the module. That is, in the directions appearing at the beginning of the module, the learner is given the option of being assessed right away if he/she can demonstrate the competency or proceeding through the module and then being assessed.
>
> The last learning experience is provided to measure whether or not the learner can demonstrate the competency identified by the terminal performance objective. The assessment evaluates performance and is directly tied to the terminal performance objective.

While the work of Cotrell stresses, through task analysis, the performances of conventional teaching, the literature suggests that more rigorous pre-service training programs may be required in terms of teacher training particularly relating to instructional skills. Wiegand[39] describes how teachers should be able to assess the development of pupils based on

theoretical constructs of Piaget, how to formulate performance objectives for children, developing question asking skills, (cognitive-memory,convergent, divergent), developing a competency for sequencing instruction (Bloom, DeCecco, Gagné ,Taba, etc.) developing competency for classroom evaluation, recognizing and assessing creativity, and competencies in interpersonal relations.

The research in both pre-service and in-service programs utilizes models of micro-teaching developed in the 1960's at Stanford University. Real breakthroughs occurred in the 1960's with the work of Flanders and Amidon[40] and others in measuring observable behaviors of teachers. The implementation of PBE encouraged the development of instructional materials designed to produce better teachers. Joyce[41] (1971) assessed sixty-three sources available commercially for software in competency based programs. These included work in interactional analysis by Flanders; analysis of teaching behavior, competencies in mathematics, teaching of science by Hall; Gibb, and Butts of the Texas R & D Center for Teacher Education; human relations packages by the Far West Laboratory for Research and Development and John Wallen and Allen Ivey; the minicourses developed by the Far West Laboratory for Research and Development; and micro-counseling by Allen Ivey. Another promising avenue for pre-service and in-service education is the Teacher Appraisal Instrument, a process developed by Dr. Madeline Hunter at the University of California at Los Angeles.

An important aspect in the breakthrough for the development of PBE was the work of Popham[42] in the development of criterion-referenced measurement as opposed to methods of normative measurement. Popham and Husek[43] describe the two:

> During the past several years measurement and instructional specialists have distinguished between norm- referenced and criterion-referenced approaches to measurement. More traditional, a norm-referenced measure is used to identify an individual's performance in relation to the performance of others on the same measure. A criterion-referenced test is used to identify an individual's status with respect to an established standard of performance. This discussion examines the implications of these two approaches to measurement, particularly criterion-reference measurement, with respect to variability, item construction, reliability, validity, item analysis, reporting, and interpretation.

For several decades the teaching of measurement and evaluation to teachers has centered on normative evaluation. Students were evaluated against one another or against an objective standard that existed in the mind of the teacher. On the basis of how the student rated on the norm, he received grades A, B, C, etc. relative to his knowledge of performance. Criterion referenced tests, however, measure each pupil against a performance standard that has been supplied. Criterion-referenced tests can be utilized in normative analysis but the reverse is not true. In this way, the movement of an individual pupil can be measured as he progresses toward a performance standard. Normative measures, such as Chi Square Techniques can be utilized to ascertain the pupil's performance as measured against himself. Criterion measures for performance objections can supply whole new methods for evaluating the achievement of pupils. However, in-service programs would require new training and retraining programs for teachers.

The technology moved very rapidly with the conception of criterion-referenced measurements. Butler[44] in *Instructional Systems Development for Vocational and Technical*

Education (1972) applies the "systems approach" to vocational and technical education at all levels. He addresses both teaching skills and content to be taught. He stresses the development of performance objectives, the development of criterion-referenced measures for (1) validating the system, (2) measuring achievement, and the development of learning activities to arrive at the objective. He also presents a plan for managing such an instructional system in vocational and technical education.[45]

Mager[46] refers to the systems approach to vocational education as "Criterion–Referenced Instruction," and has developed a self contained package for training teachers in the development and implementation of performance based approaches. This system could be utilized by either State Department Staff or teacher educators in pre-service or in-service programs.

It would appear that the commissioning of the elementary models with the systems approach as presented in Performance Based Education and other movements in instructional systems has begun to permeate elementary, secondary, and higher education and particularly vocational education. Schalock[47] developed this Schema in 1968 in one of the original teacher education models:

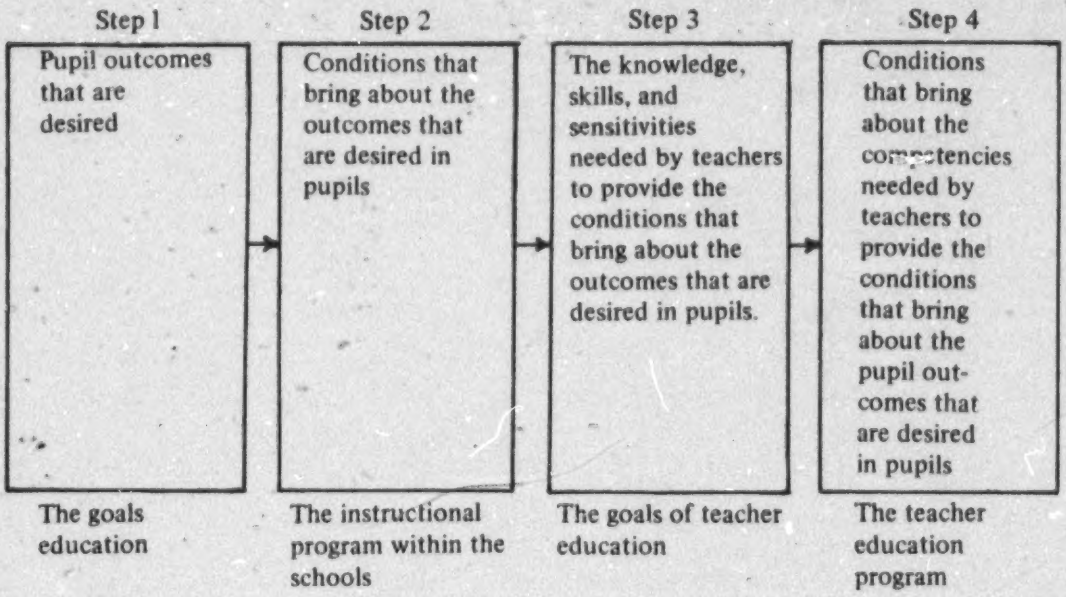

Step 1
Pupil outcomes that are desired
Step 2
Conditions that bring about the outcomes that are desired in pupils
Step 3
The knowledge, skills, and sensitivities needed by teachers to provide the conditions that bring about the outcomes that are desired in pupils.
Step 4
Conditions that bring about the competencies needed by teachers to provide the conditions that bring about the pupil outcomes that are desired in pupils
The goals education
The instructional program within the schools
The goals of teacher education
The teacher education program

Figure 2

SEQUENCE OF STEPS IN THE SYSTEMATIC DESIGN OF A COMFIELD-BASED PROGRAM

Schalock attempted to project the four steps which could culminate in a systems approach to elementary education which provided consistency in both design and product. It

should be noted that his primary focus was the performance of the child, and that all other systems were related to this aspect of curriculum. It would appear that in vocational education the systems approach has emerged. The following model illustrates the concept.

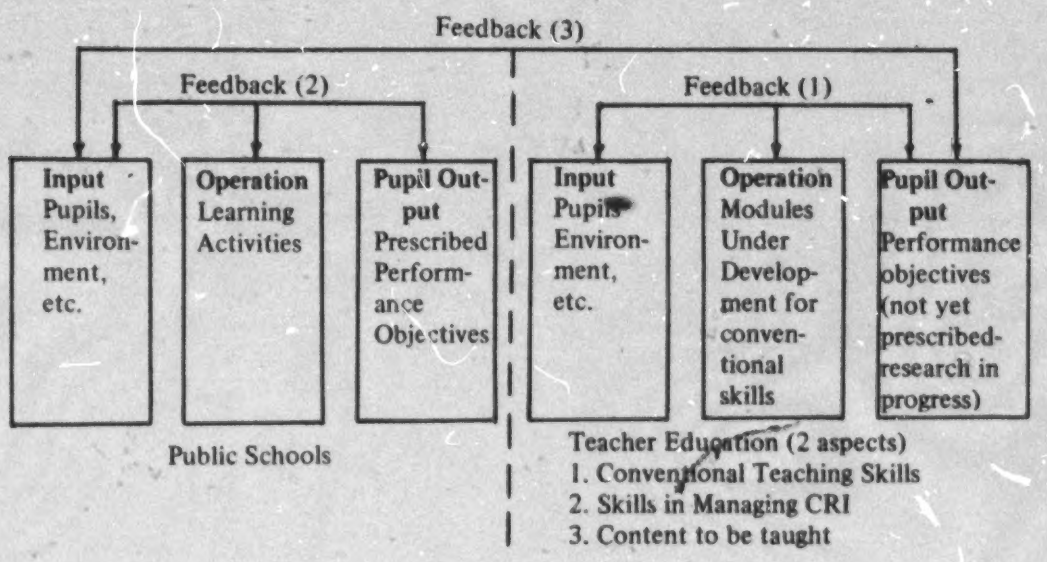

Feedback (3)
Feedback (2)
Feedback (1)
Input Pupils, Environment, etc.
Operation Learning Activities
Pupil Output Prescribed Performance Objectives
Input Pupils Environment, etc.
Operation Modules Under Development for conventional skills
Pupil Output Performance objectives (not yet prescribed-research in progress)
Public Schools
Teacher Education (2 aspects)
1. Conventional Teaching Skills
2. Skills in Managing CRI
3. Content to be taught

Figure 3

SYSTEMS APPROACH TO VOCATIONAL EDUCATION

The State of the Art in performance based education would indicate that technology has progressed to the point where the teacher education portion is ready for implementation. Competencies have been delineated, modules constructed, and criterion assessment measures designed.

One criticism that has been leveled at the performance based system was described by Elam[48] and points out that the teaching act (teacher performance) has been "exhaustively analyzed. At least 200 observational category systems have been developed, of which Flanders' Interaction Analysis and its variations are the best known." Elam cites Rosenshine's[49] research relating to the analysis of these observational category systems. Rosenshine found approximately ten of the systems related teacher performance to student achievement. This non-relating of teacher performance to student achievement (See Figure 3. Feedback System 3) has been cited in some literature as one of the weaknesses of performance based education.

One research study has been conducted in this area since 1970. Crain[50] (1973) modified the design of Schalock (Figure 2) and conducted experimental research on control and experimental groups. The control group was a group of conventionally trained elementary pre-service teachers; the experimental group was trained in performance based (modular) approaches. His research design was as follows:[51]

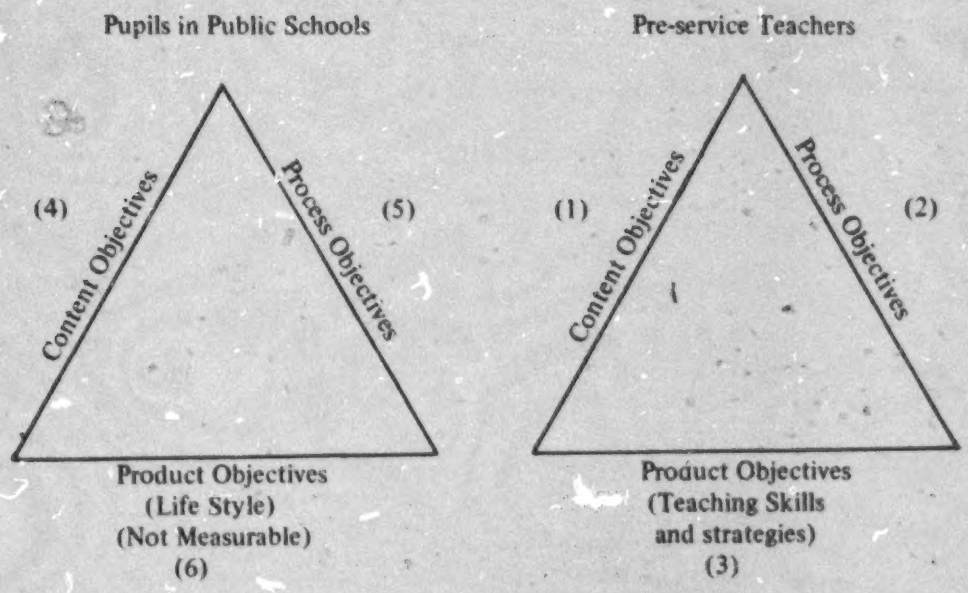


Figure 4

The experiment was conducted by establishing content (knowledges, Side 1) for elementary teachers of physical education which led to process (performance of skills in physical education, Side 2) which led to product teaching skills utilizing both product and process, Side 3. The teaching skills were variations of Flanders, Amidon and Hunter. The performance of the teachers was related to the achievement of content by pupils (knowledges of physical education skills, Side 4) and the achievement of process objectives (physical education skills, Side 5). The author concluded that Side 6, the life style of the pupils, was not measurable in the study.

The data were subjected to both criterion-referenced and normative referenced analysis. The research indicated that teachers trained in competency based approaches were superior in achievement of content, achievement of physical education skills, and in skills of teaching. Pupils, taught by teachers trained in competency based approaches, were superior in achievement of knowledge objectives and of skill objectives. The author concluded that "because the results of the study produced differences in the groups of elementary physical education teachers, the competency based approach should be subjected to further study in order to ascertain if the same results would apply to other areas of health, physical education, and recreation."[52]

The systems approach to instructional design and the development of performance based education, as developed by the various elements provided in this paper, present an opportunity to synthesize elements in education in terms of accountability. The National Council for the Accreditation of Teacher Education has developed standards for teacher education programs and indicates that institutions preparing teachers must demonstrate the effectiveness of their product. The approach suggested by Schalock (Figure 2), and design in Figure 3, and the

research of Crain (Figure 4) provide clues as to how the product can be evaluated at the teacher education level, at the public school level, and finally, how research can be initiated to relate teacher performance to pupil achievement. Such an approach is not intended to measure "teacher competence" as has been suggested by some of the literature, but rather to validate whether the total systems, as well as the parts of the system, are producing a desired product. The emphasis on PBE is on diagnosis, prescription, and evaluation with appropriate in-service education in terms of the systems approach. The widespread use of the Teacher Appraisal Instrument in recycling teachers and the competencies in this process provide promise for the improvement of instructional skills.

Performance Based Education in Alabama

The Alabama Association of Colleges for Teacher Education (AACTE), affiliated with the American Association of Colleges for Teacher Education, began in-service programs for deans and faculties of higher education in the late 1960's for the study and development of performance based teacher education. This group, in cooperation with the Alabama State Department of Education, recommended a resolution to the Alabama State Board of Education. The State Superintendent of Education presented the resolution to the Board and the resolution was adopted January 25, 1972.

Some parts of the resolution which related to the development of the concepts of performance based education were:

APPROVED RECOMMENDATIONS TO IMPROVE TEACHER CERTIFICATION AND TEACHER PREPARATION

WHEREAS, the quality of public education in Alabama is dependent to a major degree on the competence of those who teach in the schools:

NOW, THEREFORE, BE IT RESOLVED that the Alabama State Board of Education establish as a top priority the provisions of better opportunities on both pre-service and in-service levels for improving the competence of those who teach. The following steps are to be taken in achieving this objective:

Support the Alabama Association of Colleges for Teacher Education and other advisory committees in carrying out, in cooperation with such other groups and agencies as may wish to participate, studies of competency- based teacher preparation programs and recommendations for certification criteria accordingly.

Encourage greater emphasis on evaluation by institutions of higher learning, local school districts, and the State Department of Education of graduates of teacher education programs which center on concepts of competency in actual teaching and in the mastery of information.

As a part of the competency based concept of teacher preparation, establish the first year of teaching as an extended internship to serve as a part of the introduction of the individual to the teaching profession with the training institution, the local school district and the State Department of Education assuming appropriate responsibilities for internship.

Encourage experimentation in both pre-service and in-service teacher preparation programs designed to find new and better solutions to the problems of providing an adequate supply of highly competent teachers.

Require each institution to evaluate its own graduates on a continuing basis with the assistance of local school systems and the State Department of Education.

Teacher preparation is a shared responsibility of institutions of higher learning, local school systems, education associations, and the State Department of Education. Programs, therefore, are to be planned, carried out, and evaluated cooperatively by those responsible.

Require each school district in the State to develop a comprehensive plan for the continuous improvement of each professional employee and submit same to the State Department of Education within twelve months. This plan should be cooperatively developed with the State Department of Education. It shall include provision for continuous and periodic professional development and evaluation of each professional employee, preferably by testing and personal evaluation by the local board of education.

Cooperatively select and orient a professional representative in each school system to become a liaison person between the local professional staff and teacher education and certification section in the State Department of Education..

Other parts of the resolution dealt with certification, teacher education program approval, and other matters. The tone of the resolution encourages experimentation in teacher education programs, establishes the first year of teaching as an internship as part of the competency based concept, and suggests that each institution evaluate its own graduates in conjunction with the State Department of Education and with local education agencies. The resolution requires a continuous in-service improvement program for all employees in every school system and provides for a system for liaison between the local school system, the institutions of higher education, and the State Department of Education for certification of graduates and feedback into the PBE system for evaluation. In terms of the tone of the resolution, it is assumed that the certification would be based on teacher performance (competency based).

Over half of the higher education institutions listed in the *Alabama State Plan for Vocational Education* are in various stages of planning, developing, and implementing performance based programs. Two institutions were listed by Schmieder[53] and Elfeinbein[54]: Livingston University and Alabama A & M University.

Livingston University was a pioneer in the development of PBTE, and its PBE program along with twelve other universities was reviewed by a national committee prior to inclusion in Elfeinbein's study. Alabama A & M University is listed by Schmieder as having an "alternative" or "parallel" performance based teacher education program. Both Livingston University and

Alabama A & M University received Teacher Corps (U.S.O.E.) grants to assist in developing and implementing performance based programs.

The University of South Alabama received Teacher Corps funds in 1973-74 and 74-75 to assist in developing performance based programs in elementary education. The long-range plans in the proposal to Teacher Corps requested funds in 1975-77 for the development of competencies for the middle school and 1977-79 for the development of competencies for the secondary program. In addition the Department of School Administration has been working on a competency based program for school administrations and the Department of Counseling and Guidance has been developing competencies for counselors.[55]

Alabama State University has had intensive in-service programs for competency based programs for two years. All professors in the College of Education have established the competencies within their respective areas, have developed criterion measures in terms of the competencies, and are evaluating the educational product. In preparation for the development of competency based programs, a media laboratory was established two years ago. The media laboratory will have facilities for micro-teaching. In addition, the college has established a sequential program of clinical experiences for pre-service teachers (aide, tutor, etc.) in preparation for the continuing development of competency based programs.[56]

Alabama Agricultural and Mechanical University has committed the institution to the development of PBE. The commitment was strengthened by a faculty-staff pre-school conference. Several workshops have been held utilizing consultants who worked with each department. Intra and interdepartmental meetings have focused on the writing of behavioral objectives and the construction of modules. Meetings have also focused on pre- student teaching clinical experiences beginning at the freshman level. All departments in the School of Education are implementing PBE in varying degress of effectiveness. In many cases competencies have been spelled out and are being worked toward.[57]

There has been much federal and state assistance in terms of assisting colleges and universities in developing PBTE in the State of Alabama: Teacher Corps (U.S.O.E.) has provided several million dollars to colleges in Alabama that have contracted with Teacher Corps to utilize federal funds for developing and implementing pilot PBTE programs. The colleges have contracted with Teacher Corps that the seed grants would result in planned PBTE programs being implemented. In addition to these efforts the Alabama State Superintendent of Education has supplied several hundred thousand dollars to two pilot projects in Alabama to encourage the development of the concept of competency based education through the year of the internship (the first year of teaching). The projects were located at the University of Alabama in Birmingham and at Auburn University. Both of these projects have completed two years of operation.

The University of Alabama in Birmingham named their pilot project "The First Year Teacher Project", and developed a research plan similar to the research of Crain.[58] Experimental and control groups of first year teachers were established. Teams composed of State Department personnel, teacher educators, and cooperating teachers provided assistance to the experimental group while the control group received no special assistance. The purpose of the study was "how to develop a support system for first year teachers" and "what

difference does the support system make and to whom does it make a difference?" More specifically, the project attempted to ascertain the needs of teachers in skills and knowledge, to develop instruments to assess the skills and knowledge, to identify the most effective people/time utilization patterns, and to relate the program to teacher preparation programs and to the certification process.

The research model was concerned with teacher attitude, professional behavior, and teacher competencies. The model also attempted to relate to pupil achievement and pupil attitude in both the experimental and control groups.

While the results of the first year were inconclusive, the skills which clinical professors assisted teachers in the second year of research have been:[59]

1. Planning
2. Set induction in class
3. Stimulus variation in class
4. Closure in class
5. Fluency in questioning
6. Probing
7. Methods of evaluation
8. Interpretation of standardized test scores
9. Operation and utilization of various types of audio visual aides
10. The understanding and utilization of systematic observation in the classroom
11. The building of modules
12. Other more specific competencies to be determined by need.

It is interesting to note that many of these skills were suggested to warrant further study by Rosenshine and Furst (1971).[60] Nine of the skills were utilized by Crain[61] (1971) in his study which related the skills to positive achievement in pupil knowledges and pupil processes. It is also noteworthy that many of these skills are also skills identified by Cotrell[62] for vocational teachers.

The focus of the first year teacher project is on individualizing instruction.[63] In the competency on "building modules", enabling objectives would be the construction of performance objectives, developing criterion referenced instruments, constructing alternate learning activities, constructing software materials for alternate learning strategies, sequencing instructional objectives, and evaluating in terms of criterion referenced instruments. In order for such a system to be operational there would also be a necessity for a competency in diagnosing pupil needs, developing prescriptive instruction, and evaluating pupil progress through the utilization of criterion referenced measures. There would also have to be demonstrations of competency in managing large group presentations, small group discussions, and individualized activities as well as improving conventional teaching skills. Butler[64] describes a classroom management system for managing such individualizing instruction.

Plans for the first year teacher project include the establishing of a "Teacher Center"[65] at UAB. The Teacher Center concept is described by Schmieder:[66]

1. "A place where teachers share teaching experiences, have access to a wide range of instructional resources, and are trained in specific instructional competencies.
2. One of the large group of centers which represent overall a great variety of purposes. Each individual center, however, has a specific emphasis contributing to the improvement of in-service teachers, e.g., performance based programs, training of teacher interns, coordination for area educational cooperative, etc.
3. In the proposed Educational Renewal Plan, the management mechanism for carrying out the Comprehensive Educational Plan."

The University of Alabama in Birmingham hopes to utilize the First Year Teacher Project, depending upon the evaluation outcome, to "weave into the regular program the ideas and modes of operation that seem to be productive and fruitful."[67] There are already certain competency elements involved in Vocational Education Programs and the Special Education Program at UAB. Two vocational programs have developed competencies from the Teacher Appraisal Instrument and have implemented these competencies in methods courses.

Auburn University entitled their program "Continuous Professional Development Program."[68] The decade following World War II led to substantial federal grants to schools. Billions of dollars were appropriated in federal funds for myriads of projects at all levels of education in order to undertake research and experimentation. There were gains in the research effort because the effort brought new insights into teaching, learning, and the environmental factors which tend to influence what takes place in schools. Pierce describes some of the important lessons learned in this massive research effort.[70]

> "(1) The piecemeal and fragmentary approach followed in the federal grant program is not the answer to the comprehensive educational improvement which is needed; (2) Continuous staff development is necessary if schools are to be truly responsive to present and evolving education needs; (3) There is a close relationship between the character of pre-service teacher preparation and teaching effectiveness; and (4) Appropriate integration of pre-service and in-service professional development is overdue."

The Auburn Project attempted to develop a working relationship between the Alabama State Department of Education, Auburn University Faculty, and local education agencies as partners in the pilot program. Pierce points out that, although the original focus was on the first year teacher, the need for continuous in- service education soon became apparent.

Although the UAB project does not relate the need for continuous inservice, the fact that they are gravitating toward the "teacher center" concept would imply that there is the same need as visualized at Auburn University.

The Auburn University Faculty studied the developments in performance based teacher education for a year and a half and developed the Auburn philosophy of competency based teacher education. Phillips[71] describes the assumptions in the philosophy:

(1) The goal of teacher preparation is to produce professionals who will be successful in practice; therefore, the only valid measure of a preparation program is the evaluation of its graduates on the job.
(2) All faculty, not just a few, must be involved in the development of a competency based program.
(3) In order to revise a teacher preparation program, the school must:

(a) define the program as it exists,
(b) field check the program using the expertise of those professionals on the job,
(c) determine criteria to use in judging the program, and
(d) revise the curriculum using information from the university, the field, and the criteria.

(4) In revising teacher preparation, the group must concern itself not just with undergraduate and graduate education, but with the total curriculum of future educators. Thus, Arts and Sciences and other related schools must be involved in the revision effort.

The end product of such a revision procedure is a teacher preparation program that defines in terms of specific validated competencies each role for which educators are prepared. In this way, students in the program will know precisely what they will be expected to demonstrate during their preparation program and exactly how those demonstrations are related to future job performance.

Phillips also indicates that the faculty realized that there was a need to move beyond the confines of the university; a need for cooperative planning and development between the university, ten local school systems, and the Alabama State Department of Education; a need for validating competencies "(i.e., shown to be related to student achievement)";[72] and a need for a feedback system for continuous up-dating of the systems.

The similarity between the two projects (i.e., Auburn and UAB) and the summary of the research as indicated in Figure 3 would seem to indicate that both internship programs utilized the directions provided by instructional systems analysis, performance based education, and the concept of accountability.

The Auburn Staff designed the Continuous Professional Development Program to include first year teachers (approximately 200), cooperating teachers (approximately 78), clinical professors (approximately 49 in the School of Education), and State Department of Education Consultants (approximately 23). Duties and responsibilities of each were delineated. Seven of the clinical professors were in the Department of Vocational and Adult Education. Governance and committee structures were accomplished through a planning and coordinating committee representing the university, local education agencies, State Department of Education, and the project staff. Three advisory councils were also appointed to provide additional impact to the program development, i.e., The First Year Teacher Advisory Council, In-service Advisory Committee, and a Student Advisory Committee (composed of Auburn University pre-service students.)

The design included the development of support teams (composed of the cooperating agencies to work with individual first year teachers in assessing professional needs and providing assistance. Aid was requested by the first year teachers in specific subject matter or materials (32%), Discipline (22%), Teaching Techniques (19%), Classroom Organization (12%).[73] The first year teachers evaluated the type of assistance that they received from the clinical professors, the cooperating teachers, State Department consultants, and various combinations of the three. It would appear that the assistance of the cooperating teachers, in the perceptions of the first year teachers, was most helpful, the clinical professors next, and State Department consultants least helpful.

In addition to the activities of the support team, a research study was conducted by Harrison[74] who attempted to identify the professional needs of first year teachers, causes of the professional needs, sources of promoting assistance to first year teachers, and the analysis of professional needs of first year teachers as perceived by first year teachers. Questionnaires were prepared, validated and submitted to teachers. The first year teachers rated their weighted professional needs as follows:[75]

> (1) Knowledge of subject matter, teaching techniques, grouping, and evaluation; (2) location, selection, acquisition, and evaluation of materials; (3) feeling of acceptance and security and ability to discipline and motivate students; (4) ability to secure support, assistance, and cooperation from students, colleagues, and supervisors; (5) excessive work load, teaching infield, need for smaller classes, and needs relating to job conditions and professional development; (6) needs in the area of curriculum development, lesson placing and instructional procedures; (7) time for lesson planning and preparation; (8) better understanding of: policies, regulations, procedures, the community, and school plant; (9) better understanding of individual school and system-wide objectives; and (10) needs relating to keeping attendance records, cumulative research and reports, and working with teacher aides.

After investigating the assistance provided by each group (support teams), Harrison recommended, among other things, that the support team membership be changed to include four main members:[76] (1) a first year teacher; (2) an experienced teacher; (3) a principal, and (4) a liaison agent.

Auburn University has initiated plans to develop competency based teacher education by soliciting competencies from faculty members, the Alabama State Department of Education (the Divisions of Instruction and Vocational Education and Community Colleges), categorizing the competencies, conducting "needs assessments" with professional personnel, validating the competencies in terms of roles and perceptions, testing the competencies in terms of roles and perceptions, testing the competencies and revising the teacher preparation program in terms of feedback.[77]

Martin[78] describes the status of CBTE at Auburn University.

> "Development of a competency based preparation program for potential educators at Auburn University is well under way. Unlike many institutions of higher education initiating similar efforts, Auburn is attempting a total program revision including the general, professional, and specialists programs at both the undergraduate and graduate levels. The nature of the revisions to be made in the current program will be based on a systematic assessment of performance of its graduates employed in educational institutions and public school systems throughout Alabama.
>
> Some significant characteristics of the improvement process now underway are as follows:
>
> 1. All directly concerned with the professional education programs at Auburn University are involved in its improvement.
> 2. Guidance of the improvement process is a shared responsibility of the university, the State Department of Education, and public school systems, and means for making cooperative decisions have been implemented.

3. The improvement efforts concern the program in its totality rather than only certain components.
4. Departments, groups, and individuals proceed at different rates in the process.
5. Alternatives to the current program are being sought rather than only one desirable model.

During almost two years of discussion and study, the following significant events occurred that are descriptive of the current status of the redevelopment process.

1. Representatives of the State Department of Education, public school systems, and departments and schools in the University were organized into a coordinating committee. This committee was called the Teacher Education Coordinating Committee (TECC) and was to recommend ways all concerned could best cooperate in: (a) describing the nature of the present program, (b) identify the components of the program and their interrelationship, and (c) developing evaluation design for the current program.
2. The State Department of Education established and funded a program called the Continuous Professional Development Program (CPDP) which involves ten public school systems surrounding Auburn and personnel from the State Department of Education and the School of Education. The purposes of this program are as follows:

   (a) To provide assistance to first year teachers to enhance their opportunities for success.
   (b) To assist the school district in which the first year teachers are located in developing and implementing the system-wide professional in-service development program which the State Board of Education requires.
   (c) To utilize evaluative data gained through the Pilot Project and in-service program to improve pre-service and in-service teacher education at Auburn University, employing performance centered models in so doing.
   (d) To develop a model or models for assisting other school systems and teacher education institutions as they carry out the mandates of the State Board of Education with respect to first year teachers and in-service education programs.

Thus the two cooperative bodies, the Teacher Education Coordinating Committee and the Continuous Professional Development Program are two means being utilized to facilitate program redevelopment. The TECC is concerned only with recommending to the university faculty means for development of the University based preparation program. The CPDP is concerned primarily with providing recent graduates of the program with in-service activities and support. Data from activities of the CPDP will be fed back to the University to be used in identifying needed improvement in the preparation program. Thus the two groups have a common goal but different operational patterns.

Faculty members within the University have already identified the nature of their contribution to the preparation program for potential educators. In the School of Education the faculty has identified these competencies they expect students to acquire in order to assume effectively specific professional positions after graduation. These competencies have also been identified in terms of the courses currently providing them. Consequently, it is now possible to determine from an analysis of the data what competencies various schools and departments contribute to the preparation of students for certain professional positions.

The CPDP provides a means for systematically assessing what competencies are needed by first year teachers and to compare these with those identified by the University as being desirable in the preparation program. Also , through observation instruments and checklists it will be possible to determine whether or not the competencies provided through university courses are in fact needed by graduates on the job.

At the present time instruments are being developed for assessing the performance of graduates on the job in order that changes needed in the preparation program can be identified. An analysis of all data should reveal which components of the program offer the needed competencies and what the content of in-service programs in the schools should be.

In summary the major steps in the whole redevelopment process are as follows:

1. Identify university components contributing to preparation of educators.
2. Identify competencies provided in terms of courses.
3. Identify competencies needed for specific professional positions.
4. Verify competencies by observation of performance of graduates in the public schools.
5. Use verified competencies as criteria for evaluating the preparation program.
6. Recommend changes in the preparation program as a result of the evaluation.
7. Evaluate the preparation program in terms of criteria.
8. Implement a continuous, systematic means for altering the program at the University.
9. Identify and implement needed changes in in-service programs in the public schools.
10. Implement personalized instructional processes in both in-service and pre-service programs to achieve needed competence.

.....Although the process is slow and often frustrating, there is a general expectation by all concerned that Auburn University will truly have a CBTE program in operation by the Fall of 1975."

Alabama State University, Alabama A & M University, Livingston University, and the University of South Alabama have engaged in extensive in-service education of college faculty in terms of the development of PBTE. Perhaps other Alabama Institutions have also engaged in in-service programs for college faculties. The development of PBTE requires extensive in-service education for the college faculty. The change in thinking from conventional teacher education (courses, knowledge, theory moving toward practice) to performance based (or instructional systems approach) implies performances based upon task analysis, performance in simulation, performance in clinical experiences, and evaluation from feedback. The system itself implies that knowledges and skills can be ordered and validated in terms of a performance on the job or in a role. Colleges and universities in Alabama should be commended for the extensive in-service programs that they have undertaken and for the progress made toward compliance with the Resolution of the Alabama State Board of Education.

Related Research Assisting Performance Based Teacher Education Development in Alabama

Higher education institutions in the State of Alabama have utilized a variety of materials and processes developed by regional educational laboratories and other research efforts in the development of performance based teacher education. Several institutions are utilizing the mini-courses developed for field in-service programs by the Far Western Educational Laboratory.

These materials, carefully researched, feature approximately thirty hours of self-instruction for teachers. A teacher views a videotape of an exemplary teacher displaying certain instructional skills and then the teacher prepares a lesson. The teacher takes two or three pupils from the classroom, leaving the classroom with another teacher, an aide, or a teacher intern in charge, and proceeds with the children to a small area where the skills that were viewed on videotape are practiced. The children are sent back to the classroom and then the teacher compares performance on videotape with the videotape model to evaluate the acquisition of the skills. Criterion measures for self-assessment are available. If the teacher has met the criterion level, he/she moves to view the next lesson. If the criterion level has not been reached, the teacher reprepares, reteaches, and reevaluates. The research indicates that the mini-courses do promote a change in the behavior of the teacher over both a short range and long-range periods.

Another research effort that has assisted some institutions in the development of performance based programs has been the *Teaching Skills for Elementary and Secondary School Teachers* developed by Dwight W. Allen, Kevin A. Ryan, Robert N. Bush, and James M. Cooper. The teaching skills are presented on films to serve as a model for the pre-service or in-service teacher. Manuals are provided for assistance to pre-service or in-service teachers as they practice the skills through analysis of video or audio tapes. These films are utilized by several higher education institutions in performance based programs.

The Center for Research and Development at the University of Texas at Austin has been quite active in providing assistance in the development of performance based programs. The research was based on previous research by Fuller.

Fuller[79] investigated the concerns of teachers and found that the concerns of teachers seemed to follow a dependable pattern on a continuum from self-concerns, to concerns about

the tasks of teaching, to concerns about the impact on teaching. Teachers who had taught fewer years tended to cluster in concerns about self (will I survive?) and teaching skills. Teachers who had taught some years were less concerned with self and more concerned about teaching skills and impact concerns. (What impact am I having on the total education of the student?)

Hall[80] (1973) utilizes the concerns of Fuller to develop the *Concern Based Adoption Model* (CBAM) in initiating hypotheses relating to educational change models which are presently under development and in the process of being field tested. The Center is developing measures to assess stages of concern and level of use. "Data collection efforts now are targeted towards class-sectional and longitudinal studies of teacher educators adopting modules. For this effort, we will be using six to ten teacher training institutions from around the country over the next two years. We will be collecting data in schools. At the moment, the logistics are under control for the collection of data in the elementary schools with regard to team teaching."[81]

The R & D Center for Teacher Education has developed a series of teacher educator workshops designed to address concerns relating to the *Concerns Based Adoption Model,* orientation to modules and their role in personalized programs, counselor training for counseling psychologists who work as counselors in a personalized teacher education program, establishing inter-disciplinary faculty training for instructional management, and training in personalized videotape feedback.[82]

The Teacher Appraisal Instrument developed by Madeline Hunter and others at the University of California at Los Angeles has provided impetus to the development of PBTE in Alabama. The instrument, which is really a process, requires intensive training and provides real promise of arriving at basic competencies for teachers in performance based programs. Hunter describes the process in eleven steps. Stachowski[83] lists the essential elements as:

1. Can the teacher teach to an objective?
2. Can the teacher match the objective to the background of the pupil?
3. Can the teacher engage the pupils in activities with appropriate monitoring of achievement?
4. Is the teaching-learning act consonant with the principles of learning?
5. Is the teaching-learning act dissonant with the principles of learning?

In addition to the Teacher Appraisal Instrument, "A Training Program for Instructional Supervision" developed at the University of California at Santa Barbara is extensively utilized in Alabama for training college personnel and State vocational staff in skills in instructional supervision. This training package was researched, field tested, and is self instructional. It provides skills in instructional supervision in an eight step process. The process is one of re-cycling and retraining teachers through a cooperative, collegial arrangement.

Role development for administrators of colleges developing innovative programs was investigated by Wallace.[84] Wallace interviewed six adoption agents utilizing a case study approach of the personal dynamic and value system of each of the agents. After studying the case studies the author developed two categories (1) information about the adoption agent's

personality and his way of interacting with people within the institution, and (2) the guidelines or advice that each adoption agent wanted to pass on to others who might assume his role. The study then relates this to Havelack's theory to provide guidelines for adoption agents in innovative programs.

One additional tool for the development for PBTE in the State of Alabama has been the system of Management by Objectives developed by the Oklahoma State Department of Vocational and Technical Education. This system, which lends itself to social institutions, has been field tested and can provide a process for accountability. Extensive workshops have been held in Alabama concerning the Oklahoma System. The Division of Vocational Education and Community Colleges of the Alabama State Department of Education, will be operating on a Management by Objectives system by October, 1975.

Performance Based Certification for Educational Personnel

Concomitant with the development of PBTE, there was an effort to begin preparation for performance based teacher certification. A meeting was held in Florida in 1970 to prepare state plans for performance based certification.[85] At this conference California, Florida, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Texas, Utah, Washington, prepared plans for certification for each state utilizing the following format:

1. Where the State is now?
2. Where the State wants to go?
3. How does the State plan to get there?
4. What forces are helping?
5. What forces are hindering?
6. 1970-71 time line.

Andrews[86] describes the plan for Washington State, a study sponsored by the State Board of Education, "Improving State Leadership in Education." The State Board approved and adopted "Guidelines and Standards for the Development and Approval of Programs of Preparation Leading to the Certification of School Professional Personnel."[87]

Andrews traces the procedures followed as the various drafts were developed, hearings held, and drafts revised in terms of attempting to find a certification program that could be fairly amenable to all groups but still come to terms with PBE, accountability and certification.

The 1968 draft begins by establishing that the standards reflect "the efficient marshalling of Washington's knowledges and resources to furnish the best quality of preparation."[88]

The revised standards attempt to do this by:

1. Placing the primary focus of preparation upon performance. The standards call for preparation experiences to be individualized and organized in some rational and systematic fashion related to professional roles.
2. Extending the responsibility for professional preparation to include the schools and the organizations of school professional personnel, most especially so for intern and continuing career preparation. Colleges and universities will continue their major role in basic preparation. They will have an increased responsibility to collaborate with schools and professional associations in the intern and continuing phases of career preparation.[89]

The draft suggests four types of certificates: preparatory (to be utilized in clinical experiences), initial (staff intern), continuing (full-fledged professional), and consultant (for those who qualify for roles which contribute to professional preparation and to the improvement of instruction). Renewal of certificates is built into the provisions.

Certification would be in these areas: teacher certification, administrator certification, and educational staff associate certification. Each type of these certificates would relate to the preparatory, the initial, the continuing, and consultant certificates described above.

The draft also dealt with problems relating to assignment of each certificate.

> Determination of assignment is approached as a function of initial and continuing preparation. For example: Initial certification as a staff intern calls for a limited assignment and special supervision as compared with that of a person with continuing certification. Career (continuing) certification calls for continuing preparation for the same role and, if the individual desires, for a different role. Consultant certification relates to a specific role and calls for continuing preparation for the same role and, if the individual desires, for a different role. Consultant certification relates to a specific role and calls for continuing preparation in the specific role.
>
> Assignment of personnel should be based upon the person's ability and readiness to perform successfully the tasks contemplated after assignment is made. Continual in-service resources should be provided to assist the professional in improving or increasing the quality of his services. Such assistance should be systematic; that is, it should be based upon clear and agreed upon objectives, periodic assessment of performance followed each time by non-threatening feedback and support.[90]

The steps in teacher preparation programs are defined. Preparation should begin by role definition (both of what is and what ought to be). The role definitions should involve school organizations, their patrons, professional associations, and colleges and universities. There would be no single definition for the State. Definitions should be related to varying educational needs and to the institutional resources. With relation to the role definitions, preparation programs would spell out specific performance criteria. These performance criteria would be cooperatively developed, be observable behavior, and include both performance and knowledge.

When the performance criteria were established the preparation program should be organized in terms of tasks. Tasks should be related to performance criteria, the variety of student talents and perceptions, materials and faculties available, and the variety of student talents and perceptions confronted by them.

Tasks should be accomplished in simulated settings, clinical settings, and in different reality environments. Models of performance should be provided students at all levels and students should experiment with a variety of ways to achieve their unique teaching style. Students should have performance alternatives. Assessment should be undertaken in terms of diagnostic techniques, developing prescriptive procedures, and evaluated as performance readiness suggests new tasks. Programs should be individualized, students should assume

responsibility for ordering preparation tasks before they complete requirements for continuing certification.

There should be provisions for feedback in the program, having the student "see, hear, or feel himself as he is (or was) while performing a task, and concurrently see, hear, or feel how others reacted to his performance."[91]

Placement would be a function of the preparation program in terms of his preparation, his teaching style, and his performance. The certification plan provides for coordination and supervision of the student in terms of feedback into the instructional program.

The State of Alabama has, historically, followed certifictation by "approved programs." The development of a section of Teacher Education in the Division of Instruction, the subsequent development of standards and guidelines for approved programs, the establishment of visitation teams at five year intervals, and the subsequent revision of the standards, suggest that the State will continue the "approved program approach."

A certification committee has been appointed by the State Superintendent of Education and "has had a series of profitable meetings. However, it has not as yet developed any documents for release."[92] The committee held one public hearing in the summer of 1974. The hearings consisted primarily of pleas by special interest groups, i.e., Departments of English, Departments of Foreign Languages, Departments of Music, Departments of Mathematics, Departments of History, and School Psychologists from higher education institutions for more credit hours in subject areas.

Inasmuch as the interest groups delineated above were requesting less emphasis on "teacher education" and what would amount to more "student credit hours generated" in each department, for better trained teachers in "content to be taught to pupils" and supplementary knowledges "as well as" general education, it would lead one to suspect that the various educational communities represented may not as yet have grasped the full implications of the movement toward educational accountability. The PBE movement will insist that the academic areas relate to the performance of pupils. How this movement has affected and will continue to affect College Deans of Arts and Sciences, Academic Vice-Presidents, Deans of Medical and Dental Schools, Deans of Nursing Schools, etc., and College Presidents will be dealt with in the section of this paper on *Career Education in Alabama*. Educational accountability as a concept is not related simply to the teaching profession.

The professional groups, i.e., the AFT, AEA, classroom teachers, administrators, made recommendations to the certification committee related to PBTE concepts as discussed in the Washington State draft outlined above. They may be aware of the problems which PBE is attempting to address.

Research Projects in Curriculum Development in Vocational Education

VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES (V-TECS)

The Vocational-Technical Education Consortium of States (V-TECS) was formed on July 1, 1973. The States were Alabama, Florida, Georgia, Kentucky, Mississippi, Texas, and Virginia. The fundamental purpose of V-TECS is to develop catalogs of performance objectives and criterion-referenced measures in occupational education. V-TECS is developing objectives based upon a uniform procedure consisting of: (1) development of task statement booklets by a domain (a group of job titles that are closely related) of job titles by conducting a State-of-the-Art of curriculum materials and task analysis through interviews with incumbent workers, (2) selection of a representative random sample of incumbent workers within the state which is developing the catalog, (3) administration of the task statement booklets to the incumbent worker sample, (4) computerized analysis of information collected from the same in terms of time spent on tasks, difficulty of tasks, etc., (5) conversion of the task statements into performance objectives with companion criterion-referenced measures, and (6) a comprehensive field test and dissemination program.

Policy matters of V-TECS are handled by a representative Board of Directors composed of one member from each participating state who is appointed by the State Director of Vocational Education. The Community College of the Air Force is an associate member due to their accredited status with the Commission on Occupational Education Institutions and their expertise in performance-based instruction.

A central staff is provided by the member states to coordinate, manage, and provide technical assistance to all states developing products for common use by members.

The Vocational-Technical Education Consortium of States is an operating unit of the Commission on Occupational Education Institutions, Southern Association of Colleges and Schools (COEI/SACS). COEI/SACS is a private non-profit organization which has as its purposes (1) accreditation of institutions eligible for membership, (2) general evaluation activities, and (3) research activities related to the first two purposes.[93]

During the first year of operation V-TECS developed a governing board, governing procedures, including a management model, and various developmental activities (five workshops) for project directors and coordinators in the various states. The research design for Task Analysis, including the instruments and scales were similar to and modeled after a study

conducted by the Educational Testing Service (Princeton, New Jersey) for the National Laboratory for Higher Education entitled, "Institutional Grade Inventory".

The report of the activities of the first year delineated in detail the procedures to be followed in each state in validating the Task Analysis statements. First priorities were determined by each state relative to the areas in which task analysis would proceed. Each state had to bargain for those domains in which they would work. The domains were as follows:

Alabama	Electronics Occupations (Radio & TV) Air Conditioning
Mississippi	Plumbing (Building Trades) Landscaping
Georgia	Data Processing Production Machine Manager
Florida	Body and Fender Turf Management
Kentucky	Dental Assistant Food Distribution Carpentry Agriculture Power and Machinery Teller Child Care
Virginia	Secretarial, Stenographic, Typing, and Related Food Management, Production, and Services
Texas	Water Management Police Service Technology[94]

Project directors and coordinators were to devise task statements in terms of the agreement by:

(1) Review and observation of technical procedures and by workers.
(2) Identification of existing task lists or statements from technical manuals and germane literature.
(3) Interviews were to be conducted with incumbent workers and their immediate supervisors.
(4) Use of craft committees and selected committees of instructors to identify incumbent worker tasks.
(5) Provision of space for a survey of workers to add task statements not included on the list.

Once the task statements are devised utilizing the procedure above, the task booklets obtained are submitted to workers utilizing a random sampling of incumbent workers holding a job classified within the domain. The base data used in determining the sample size is the occupational information (coded from the Dictionary of Occupational Titles) collected during the 1970 Census of the United States. The body of information collected is statistically analyzed with inferences made to the population.

The statistical analysis technique provides:

(1) Time-Spent Index - A rating of how much time workers spend on the tasks up to 100% of the time;
(2) Task Criticality Index - Identify those tasks workers rate from most critical to least critical;
(3) Task Difficulty Index - A seven point scale to derive the workers perception of the difficulty of each task. The immediate supervision of the incumbent workers also rates the difficulty of the task. The responses are then correlated, and the resulting figure becomes the difficulty index.
(4) Task Perishability Index - A measure of the relative perishability of a task to relate to the need for retraining or refresher courses which the worker will need.

Once these analyses are completed, writing teams, consisting of one instructor, one technical writer, one person experienced in developing criterion-referenced measures, and one person having state supervisory responsibility over the domain, are selected. These writing teams are trained and write performance objectives and criterion-referenced measures. The resulting catalog of performance objectives and criterion-referenced measures is field tested and computerized.

Each state using these materials will develop a comprehensive model for disseminating the catalogs, and a comprehensive in-service training program must be developed which is designed to prepare both instructional personnel and supervising personnel in the techniques of managing performance based instruction. These activities must include in-service education for curriculum development and in-service education for teachers and supervisors.

Provision has been made for up-dating the curriculum materials because of technological change, input from teachers and curriculum developers, and craft advisory committee input. In addition, the project will be subjected to a third party evaluation.[95]

DEVELOPING EDUCATIONAL LEARNING THROUGH TASK ANALYSIS (DELTA)

The Division of Vocational Education and Community Colleges of the State of Alabama wrote and had funded another federal project entitled "Developing Educational Learning Through Task Analysis (DELTA)". The funding of the DELTA Project enabled the Division to employ additional personnel to enter into a Memoranda of Agreement with V-TECS to begin Task Analysis in seven additional domains. These domains are:

Nurseryman
Bookkeeping, Machine Operator, Payroll Clerk and Accounting Clerk
Automotive Parts Clerk
Licensed Practical Nursing
Alterationist
Cosmetologist
Masonry

The DELTA Project follows the exact procedures delineated in the V-TECS portion of this paper.

The Development of the National Network for Curriculum Coordination in Vocational-Technical Education

The National Network for Curriculum Coordination in Vocational-Technical Education (NNCCV-TE), established in 1974, is composed of seven curriculum management centers strategically located throughout the United States and trust territories. These centers are located in the States of California, Illinois, Kentucky, Mississippi, New Jersey, Oklahoma, and Washington. Each of these seven states receives supportive funds from the U.S. Office of Education to serve in a coordinative capacity to bring all 50 states into clusters of affiliated states, thus providing a nationwide linkage. The State of Alabama has a representative to the curriculum center in Mississippi. States that comprise the Southeastern network are Mississippi, Alabama, Florida, Georgia, Louisiana, North Carolina, and South Carolina.

The directors of the seven curriculum centers and the chief and staff members of the Curriculum Development Board, Division of Vocational Education Research, U.S. Office of Education, comprise a Curriculum Coordinating Council which will plan and carry out activities and evaluate the progress of the NNCCV-TE.

The primary goal of NNCCV-TE is to coordinate curriculum development, dissemination, utilization, and evaluation activities throughout the nation. Federal funds to support the centers were awarded to help each: (1) improve the capabilities of state curriculum laboratories to operate as curriculum management centers; and (2) reorient their efforts toward curriculum development and management in career education. Curriculum management, as defined for use in NNCCV-TE, includes decision making, planning, and implementation with respect to: development of curricula; diffusion and dissemination of curriculum research in the foundations of curriculum development; coordination of curriculum effort with development in educational technology and the systems of delivery and administration; the preparation of curriculum development specialists; and the preparation of educational personnel for adapting and using curriculum materials.

The NNCCV-TE has five major purposes:

(1) To provide a mechanism for the sharing of information on curriculum materials available and under development.
(2) To develop and recommend guidelines for curricula and curriculum development with the ultimate goal of increasing the effectiveness of curriculum materials and

enhancing their transportability.

(3) To establish and maintain a system for determining curriculum needs in vocational-technical education and reporting conclusions in the field.

(4) To coordinate activities in curriculum development, dissemination, and utilization with the aim of avoiding unwarranted duplication, enhancing quality of effort, increasing the transportability of curriculum materials, and improving the acceptance and use of curriculum materials.

(5) To report these curriculum efforts to the field.

NNCCV-TE was designed to serve (1) the state research coordinating units; (2) other units of state departments of education such as agencies concerned with vocational technical education, manpower development, adult education, and education for the handicapped; (3) teacher education programs in colleges and universities; (4) local education agencies; (5) professional organizations; (6) the two national centers for vocational- technical education; and (7) special and regional agencies and groups.

Each center, when the network is fully functioning, will make available lists of curriculum to each of the other six centers in sufficient quantity so that they can be distributed to affiliated states. This also includes materials that are planned and in developmental stages.

Abstracts of curricula are sent from respective regions to the Ohio Center for inclusion in AIM. The U.S. Office distributes lists of federally funded curriculum projects to the seven centers in sufficient quantity for dissemination.

The network will also serve as a communication system for recommending guidelines for curricula and curriculum development, which will be drafted this year and disseminated to the centers and their affiliated states.[96]

This network will provide the framework through which the curriculum materials from V-TECS/DELTA can be provided other states. Likewise the network can provide the State of Alabama with task analysis statements, performance objectives, and criterion-referenced measures, completed by other states.

Letters were written to each of the directors in the fifty states for the State-of-the-Art in curriculum development. Although not all of the directors have replied to the correspondence, those who have replied provide indication of similar activities, i.e., task analysis, etc., in various projects throughout the country.

Career Education and Curriculum Development

The State of Alabama enrolled 83,616 pupils in the first grade in 1967-68. It is projected that 42,458 will graduate from high school, i.e., a loss of 50%.[97] Statistics indicate that approximately 50% of those graduating from high school will enter college and about 50% of those that enter college will graduate from college. Only about 12% of the total group of students that entered in the first grade will graduate from four year higher education institutions. It would appear that the Division of Vocational Education and Community Colleges would have a right to ask, "What about the other 88%?".[98] Somewhere along the line the irrelevancy of what is taking place in schools is taking its toll on Alabama pupils.

Alabama isn't the only place where this has been happening. Figures in 1963 indicated that the high school, nationally, loses one-third of its pupils between the ninth and twelfth grade.[99] The irrelevancy of a curriculum for elementary and secondary pupils that deals with the acquisition of knowledges is bound to increase as the knowledge explosion compounds the problems of conventional academic learning.

It was in this framework that the Career Education concept, formulated by Sidney P. Marland, and then translated into the Alabama concept of career education by an interdivisional State Department of Education, came into being. The concept can be found in two publications of the Alabama Department of Vocational Education and Community Colelges. These publications are *Career Guidance Handbook* and *Career Education in Alabama: The Art of the State.*

Basically the concept describes career education as "roles" that one assumes in a lifetime, including the work career. They include career awareness, programs in elementary schools, career exploration in middle school, and career preparation and placement in secondary and post secondary schools.

If the self-concept role of elementary pupils is defined as their being able to perceive themselves in ever larger numbers of roles and in terms more approximating reality and if performance objectives were developed for the goal, then the construction of criterion measures and subsequent chi square analysis techniques as described by Butler could give indication of the success of teacher activities related to pupil behavior.

The need for exploratory experiences for boys and girls so that they can have a basis for making career decisions must be placed in the curriculum. Perhaps it can reduce the school leaving rate in Alabama.

It would appear, however, that a very important implication has not occurred in some professional circles. *The Alabama Career Education Concept, combined with task analysis techniques, now provides a viable framework for making academic curriculum more relevant for every segment of education in Alabama; from elementary school, secondary school, two year institutions, and four year institutions of higher education.*

As ordinary middle American citizens move about their various roles in day to day living, task analysis techniques can derive minimal skills in communication, mathematics, sciences, etc. that are utilized in those activities. Task analysis techniques can also derive professional skills for careers. Colleges are beginning to make distinctions between the "general education program" and the "specialized education programs." Both the content to be taught and the supplementary knowledge for teachers should be related to the elementary pupil or to the college student.

There is evidence that changes are coming rapidly to four year higher education institutions in the State of Alabama. At least seven institutions of higher education in Alabama have evidenced interest in career education, not necessarily as it applies to the preparation of teachers for teaching career education, but as it applies to the career development of *ALL* pupils in higher education, particularly in making subject matter relevant.

Perhaps, as the realization of the implications of career education begin to permeate higher education, it would be appropriate to suggest that a systems approach to instruction in any area generally leads to systems approach in other areas. This process, combined with the concept of accountability, may provide the framework for curricula reform in the next decade for nearly every segment of education.

Educational Planning- the 1202 Commission

The concept of accountability has resulted in considerable pressure from federal and state governments to plan for the expenditures of both state and federal funds in terms of an educational plan that will meet the needs of the various states. Each state has had to supply a "State Plan for Vocational Education" to federal authorities for the past several years. Each year, a progress report must be issued in terms of the objectives of the state plan, cooperatively established, as published in the plan.

Congress was aware of the need for comprehensive state planning for education and especially planning for post-secondary Education. This need was expressed in Public Law 92-318, Title XII, Section 1202, Education Amendments of 1972, in which Congress requested that a state commission be established to administer the various provisions of the act for post secondary education within the state. The commission was to be broadly and equitably representative of the general public, private, non profit, and proprietary institutions, public post secondary institutions, including community and junior colleges, post secondary vocational schools, area vocational schools and technical institutes, and four year institutions of higher education and branches thereof.

The section of the law provided that the Governor could appoint an existing commission or agency to handle the provisions of the act, or appoint a new commission. Because there was no commission or agency in Alabama which met provisions of Title XII, Section 1202, the Governor appointed a Commission for Alabama, by Executive Order No. 50 in 1974. The chief executive officer of the Commission is the State Superintendent of Education.

The 1202 Commission may establish committees or task forces, and/or utilize existing agencies or organizations to make studies, conduct surveys, submit recommendations or otherwise contribute the best available expertise from the institutions, interest groups, and segments of the state most concerned with a particular aspect of the commission's work.

Section 1203, Title XII provides that the U.S. Commissioner of Education may:

(1) Expand the scope of the studies and planning required in Title X through comprehensive inventories of, and studies with respect to, all public and private post secondary educational resources in the state, including planning necessary for such resources to be better coordinated, improved, expanded, or altered so that all

persons within the state who desire, and who can benefit from, post secondary education may have an opportunity to do so.

(2) Make technical assistance available to State Commissions, if so requested, to assist them in achieving the purposes of this section.

The first meeting of the commission was held August 28, 1974. At that meeting the commission adopted the following:

> The following planning objectives and procedures (will) be developed and implemented through the creation of task force or forces, representative of all segments of post secondary education, for the purpose of input of information and advice of the "practitioners" into the deliberations of the commission.
>
> 1. ASSESSMENT OF CURRENT PLANNING EFFORT. The Commission will conduct an assessment of all comprehensive planning for post secondary education in the state. The purpose of this assessment is to identify the scope of each planning effort and present status of each project.
> 2. ASSESSMENT OF RELATED DATA. The commission will identify, collect, and compile pertinent data related to higher education, including various enrollment reports, projections, staffing patterns, course offerings, facilities, credit hours produced, etc. of post secondary institutions.
> 3. IDENTIFICATION OF INDICATORS. The data collected in the previous activities will be assimilated and indicators of concerns, needs, and/or problem areas identified.
> 4. ALTERNATIVE STRATEGIES EXPLAINED. Alternative planning strategies to overcome the identified concerns, needs and/or problem areas will be explored. The most educationally appropriate, economically feasible, effective and efficient planning strategy will be developed.
> 5. INTERIM ISSUES. While long range planning for post secondary education is being done, the Commission will meet interim issues as requested to do so, or as it feels its responsibility to do so.

While the purpose of the 1202 Commission is primarily that of planning for all of post secondary education, it is interesting to note that it is embedded in Public Law 92-318. U.S.O.E. continues to call for accountability, particularly with regard to curriculum reform that responds to pupil needs.

Early meetings of groups working with "developing institutions" decried the fact, that, although significant federal funds were being invested in curriculum reform in higher education and in providing student loans (work study, etc.), that students were being "shown in the front door and shoved out the back door".

Alabama has had much publicity concerning the attempts of higher education institutions to generate "student credit hours" in ever expanding programs, establishing branch institutions, offering more and more courses, particularly in a period predicting declining enrollment. To offset declining undergraduate enrollments, many institutions are developing graduate programs, particularly night graduate programs for teachers in order to maintain "student credit hours generated."

Some four year institutions of higher education in Alabama are coming to grips with curricula problems and problems relating to the need for rapid change. One institution reorganized recently with the purpose for reorganization as "preparation for rapid change".

Experiments in "new" colleges prepare the other dimensions of the institution for the adoption of change models. Orr[100] has proposed that "Planned Program Budgeting Systems" may assist in initiating reforms in educational programs. However, until university boards, politically powerful entities, direct their efforts toward accountability for programs, many college presidents will continue with conventional programs; with "publish or perish" philosophies for faculty, and with emphasis on "pure" research as opposed to "teaching research".

It would appear inevitable that some steps will have to be initiated in Alabama to establish accountability for programs. The initial manifestations of the need for accountability may be in the proliferation of programs with resulting publicity, but the final measure of accountability will be the University Presidents' task in accounting for internal programs relating to defined needs assessments and designing explicit objectives and curricula to meet these needs with corresponding evaluation procedures to indicate that the programs are meeting their objectives.

If Alabama has a problem with University Boards, it has another problem. Over the years, a multiplicity of boards has been established by law, to regulate the education of students in areas such as cosmetology, barbering, medical technician, nurses, etc. Any of these groups can write a project to Washington to receive funding for an educational program to fill a need. Some of these educational programs are designed so that they exclude most students because the curricula stress specialized knowledges rather than performance. In the meantime, dentists train their oral hygienists, nursing homes use untrained aides to do work of LPNs, and, in spite of the fact that the Governor of Alabama has established new medical schools in the State of Alabama, there remains a shortage of physicians. There is evidence that Washington is aware of the multiplicity of boards. One recent publication suggested that it was time to place all education under the auspices of a single board that could be held accountable for the education product.

Perhaps the 1202 Commission, with its emphasis on planning, is a step in that direction.

Placement for Accountability

Every educational institution should become involved in placement. Placement becomes that portion of the instructional system which provides the feedback for evaluating the system. Comprehensive placement must be undertaken for early school leavers, comprehensive high school graduates, graduates of area vocational centers, graduates of technical colleges, graduates of junior colleges, college drop-outs, and college graduates, whatever the area of endeavor.

The Career Education concept, with its emphasis on roles, demands that all educational programs have feedback on home economics programs; that accountants do in fact become accountants, that brick masons can and do construct walls, that history majors become historians, and that creative writers do write and publish. The concept of accountability also suggests that programs to induce appreciation for the arts do, in fact, produce appreciation for the arts in terms of observable behavior. It also implies that all vocational programs must provide a feedback system for their product.

One of the functions of education is to develop alternatives for students. However, in conventional programs, the student is presented a "pot pourri" and hopefully he will open his own alternatives. This is a rejection of educational responsibility. Students should explore widely in areas of relevant experiences, but once career choices are made, the educational institution has a responsibility to follow through, to evaluate the product, whether that product is a result of the exploratory experiences or of the specialized programs.

The result of a system that is not held accountable for a product provides the chaos of having: (1) trained engineers unemployed in Seattle, (2) 17,000 teachers trained for 5,000 positions in Illinois,[101] and (3) Ph.D's that cannot find work because they are overtrained for teaching in public schools and cannot find college faculty positions in a period of declining pupil enrollment. These people were trained at public expense. The greater tragedy is that the pupils invested in a system that they trusted. They invested time, energy, and money only to be told that the educational system is not to be held responsible.

The development of a system for predicting the market for graduates in any area, the development of a system for allocating the preparation of personnel, the development of a system for validating the curriculum in terms of the product produced, and the placement of

that product with resulting feedback into the system is essential. The argument that there should be competition for the product produced is a business slogan. In education, the profession is dealing with human beings who aspire to accomplish those things that the educational system is designed to produce. The system is supposed to produce the result, not based upon predetermined entrance requirements that are guaranteed to produce the result, but upon solid evidence of performance that is designed to take pupils with their aspirations to the specified goal. If the pupil cannot meet the performance criteria, then appropriate measures should be provided by the institution to assist the pupil in selecting viable alternatives in career ladder progress. Comprehensive placement plans should be drafted and appropriate feedback measures should be provided programs. Placement plans are a necessity if the educational system is to provide the services for the product, in this case, *THE PUPIL*.

Accountability - An Examination of One Plan

A review of the literature relating to accountability reveals that there are about 4,000 major publications relating to the concept. A conference was held in Tucson, Arizona, in 1970. The conference was titled "*Accountability Through Evaluation,*" and the proceedings were published in 1971. The material includes a scheme for evaluation; a systematic approach to needs assessment; the utilization of planning-programming-budgeting systems; performance contracting; and educational program audits.[102]

There is evidence that a system of educational accountability will eventually be developed for the State of Alabama. The Division of Instruction of the Alabama State Department of Education is presently researching an evaluation model which could provide direction for educational accountability. As Alabama proceeds to develop instructional systems, the leadership should study and research the models developed in other states.

Michigan has been one of the first states to develop an accountability system. Florida has also developed a system. Lessenger[103] indicates that "By the fall of 1972 some 23 states had passed legislation or joint resolutions featuring some aspect of accountability. In little more than a year the number jumped to 33, and another dozen states are currently considering action of some kind."

The Michigan Accountability Model has six steps:[104]

Michigan's six-step accountability model has a number of appealing features:

1. Involving persons from throughout the state in defining common goals is a useful way of focusing communication about educational accountability.
2. Translating common goals into objectives potentially provides a broad base of important variables for assessing needs in Michigan's schools.
3. Assessing needs in relation to objectives derived from the common goals should provide information to state and local-level decision makers to help them determine priorities for a variety of needed change efforts.
4. Testing alternative delivery systems should assist the state to deyelop a research base for assisting schools to adopt innovative strategies that will serve high-priority needs.
5. Fostering the development of local evaluation capability should assist the schools to assess local needs; to design, implement, and assess their innovative efforts; and to evaluate their personnel on fair bases.
6. Using feedback from the accountability system to guide state and local educational policy should assist school districts and the state department to fulfill their leadership roles in education.

House[105] et al. describe the procedures that were utilized to derive the broad goals. The goals were translated into performance objectives with assessment measures in terms of objectives, development of alternate learning activities, and with feedback systems for continued evaluation.

House et al. are very critical of the Michigan Accountability System. They are not critical of the model developed above, but they are critical of the implementation and the utilization of the model. They make the following recommendations.[106]

> The Michigan accountability model itself has many good features. It has stimulated public discussion of the goals of education and provided direction for state accountability efforts. It has involved educators throughout the state in efforts to develop objectives and it has resulted in pilot forms of objectives- referenced tests that some teachers have found useful. Overall, the state's accountability work has created an aura of innovation and change.....
>
> ....However, in implementing the accountability system many activities have been inconsistent with the model's intent-and even counterproductive....In this respect we have made a number of specific suggestions that we think would improve the Michigan assessment, though we confess that, beyond the small group of developers themselves, support for the assessment program is not strong or widespread. In fact, it is difficult to see exactly what decision situations the assessment will serve. WE HAVE SUGGESTED SLOWER DEVELOPMENT, MATRIX SAMPLING, PUTTING THE ASSESSMENT ON A VOLUNTARY RATHER THAN MANDATORY BASIS, AND PLACING MORE EMPHASIS ON THE DEVELOPMENT OF SCHOOLBASED EVALUATION. EVENTUALLY, THIS SHOULD IMPROVE THE ASSESSMENTS QUALITY AND UTILITY.
>
> Involving more educators and providing assistance to those who want to implement the full accountability model is strongly recommended.....Again we laud the SDE on its bold and innovative leadership in attacking some of the major educational problems of our time. We are sincere in believing the Michigan staff to be as competent and highly motivated as that of any state education agency in the country. In particular, state education agencies often suffer from a failure of imagination and nerve. We are happy to say that is not the case here. We do hope that the SDE will realize that such admirable, aggressive behavior in attacking complex problems often results in errors. One of the ways of catching such mistakes and correcting them is by listening carefully to what others have to say.

Alabama should research all evaluation models as the State Department of Education begins to exert leadership for the development of the Alabama plan. The research indicates that the plan is already under development and that efforts are proceeding on a "broken front". Perhaps it is time to bring the disparate elements together and to coordinate the efforts of the various divisions. Vocational education is moving rapidly toward initiating instructional systems. Support systems will need developing in other areas. In any event, the research indicates that the total emphasis is on the "pupil" and that all other elements in the system must generate educational curricula and instruction to provide the pupil with (1) a needs assessment, (2) viable learning alternatives to reach his/her aspirations, (3) evaluation in terms of the pupil, and (4) accountability for programs.

All other support systems should support these concepts. Cooperative efforts should involve educational agencies, higher education, and the Alabama State Department of Education, in generating curricula relevant to pupil needs.

Curricula in Vocational Education-Alabama State Department of Education

Interviews with the State Supervisors for the Seven Service Areas in Vocational Education and a precipitate survey of curriculum materials indicate that nearly all the service areas have constructed curriculum outlines, curriculum guides, and supplemental instructional materials in every area of agribusiness, trade and industrial education, distributive education, business and office education, and home economics. In most areas the objectives have been "behaviorally" oriented. There are vast amounts of materials represented by the curricula, and there has been considerable labor expended by State Supervisors, curriculum specialists, and teachers in constructing the materials.

Three areas have not completed construction of courses of study in all of their areas, i.e., industrial arts, health occupations education, and career guidance. There are reasons why these areas have not been able to develop complete guidelines. Interviews with the State Supervisors revealed the following by areas.

AGRIBUSINESS

The Agribusiness Service Area is not product oriented but stresses career development education. Because of the rural nature of agribusiness, the service area is capable of supplying career guidance through exploratory experiences for pupils in grades 7 through 10 in occupational clusters in woodworking, metals, mechanics, etc. The exploratory experiences stress hands-on experiences for pupils in these grades.

At the eleventh grade, career decisions are made by the pupil, and specialization in the agribusiness clusters begins for pupils who choose to begin a career in one of the clusters. Leadership training is provided through the FFA. The pupil can choose to enter a specialization for farming or forestry. Shop training provided in Agribusiness, particularly in rural areas, prepares the student for apprenticeship roles.

The service area has developed course outlines for each job and also for each career cluster. The course outlines are prepared by subject matter specialists and teachers, and field tested prior to implementation in the classroom.

The principal problem facing the service area is training teachers to work in such a diversified curriculum. The area sponsors short courses and workshops in the summer to train instructors. Last summer 418 teachers participated in 23 training programs.

HEALTH OCCUPATIONS EDUCATION

There is no finished curriculum product for all of the various health occupations areas. The Regional Technical Institute, part of the UAB complex, either has programs in operation or programs proposed in physical therapy assistant; optometric technician; medical laboratory technician/certified laboratory assistant; respiratory therapist and respiratory technician; health facilities equipment technician; dietetic technician; medical office assistant; medical secretary; emergency medical technician; electroencephalographic technician; occupational therapy assistant; medical records technician; health data processing technician; radiologic technician; cytotechnologist; dental laboratory technician; histologic technician; nuclear medicine technician; and probably other areas. The Regional Technical Institute represents a cooperative arrangement between the University of Alabama in Birmingham and the Division of Vocational Education and Community Colleges. Curriculum for the health occupations is developed cooperatively.

Linkages have been established between the junior colleges and RTI in that students can take one year of work in junior colleges and then transfer to RTI for the applied Science Degree. Some junior colleges have complete associate degree programs for pupils in various health occupations, depending upon the qualifications of personnel teaching the programs.

The LPN curriculum was established in 1969, approved by the Board of Nursing, and is offered in technical institutes. Some junior colleges offer programs in registered nursing. The technical institutes offer training in nurses aide programs.

The Area Vocational Centers offer training in health occupations clusters. The clusters offer general theory, skills and clinical experiences in a variety of health related areas for exploratory experiences.

One of the major problems facing the Service Area is the multiplicity of boards and agencies that, under the law, govern the curriculum. The Service Area must work cooperatively in the establishing of curricula with all agencies involved.

HOME ECONOMICS EDUCATION

The home economics service area will have completed a course outline for Exploratory Home Economics and Career Guidance for grades seven and eight by Fall of 1975. The curriculum outline was developed cooperatively with teachers from the field, supervisory staff and curriculum specialists. The outline will be field tested, revised and implemented.

In Occupational Home Economics, a catalog of performance objectives and criterion referenced measures based on a task inventory is being developed for the alterationist. Incumbent workers, supervisory staff and curriculum specialists are involved in developing this catalog. The finished catalog is scheduled for field testing in the Fall of 1975.

The curriculum outline for Family Living aimed toward the interest of both boys and girls will be complete by Fall of 1975.

A course outline for Cosmetology Education has been sent to each secondary and post secondary instructor in the state.

Curricula in all areas are developed cooperatively utilizing teachers from the field, teacher educators, state supervisory staff, and curriculum specialists.

BUSINESS AND OFFICE EDUCATION

The Area of Business and Office Education has compiled curriculum guides for grades 9, 10, 11, 12, and post high school programs. Course outlines have been prepared, based on the textbooks utilized in the courses. The course outlines were developed by a committee of six exemplary teachers and the State Staff.

The Area has utilized every business and office education teacher in the state to develop units and to develop some learning activity packets. The Area has developed behavioral objectives for the course outlines, and is utilizing a great deal of commercially prepared curriculum materials. The Area has concentrated both on content to be taught and on teaching methodology.

A New Office and Business Education Learning System (NOBELS) has been developed by Frank Lanham and others, and has been published by Ohio State University. It is a compilation of 373 educational specifications in behavioral terms that represent basic tasks performed by 16 to 24 year old office workers. The tasks are based on empirical data collected by interviewing 1,232 office employees and their supervisors from four areas of the country. The specifications were drawn from 4,564 basic tasks and 32,447 steps of task performance. The revised study is intended for teachers and curriculum developers at the secondary and community college level. The BOE area has reviewed this study and supplied it for review for the State-of- the-Art.

DISTRIBUTIVE EDUCATION

The Distributive Education Service Area has been working in a consortium of eleven states to develop curriculum materials based on the Lucy Crawford Task Analysis study entitled "A Competency Pattern Approach to Curriculum Construction in Distributive Teacher Education" (Five volumes). Crawford began her work in 1963 and developed her research in four steps by investigating the beliefs of distributive education state personnel and teacher education personnel. The theoretical findings provided a base for future research. In the next three studies, she involved all distributive education state supervising personnel and teacher education personnel in the United States, 48 distributive education teacher coordinators, and 400 distributive workers at the entry, supervisory, and management levels. Specific objectives were to determine (1) Basic beliefs concerning distributive education, (2) Critical tasks of the distributive education teacher coordinator, (3) Professional competencies needed to perform the task, and (4) Technical competencies needed by the teacher coordinator to develop these worker competencies.

Crawford utilized this task analysis approach to do an occupational analysis of 69 occupations. The DE Service Area has worked in a consortium of eleven states (Alabama, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, North Carolina, Ohio, Washington, and Mississippi) to develop 509 individualized Learning Activity Packets to be used for developing 983 competencies in concept skills and attitudes for seven occupational areas: Department Store, Food Store, Hotel/Motel, Restaurant, Service Station, Variety Store, and Wholesaling. These areas include the 69 occupations included in the Crawford Study.

The learning activity packets (LAPS) which have been developed are comprised of pre-tests, behavioral objectives, learning activities, learning managers guide, and post-tests. The DE Staff has been involved in regional workshops to train teachers in instructional management in the use of the LAPS.

TRADE AND INDUSTRIAL EDUCATION

The Trade and Industrial Education Service Area serves approximately thirty different trades. These are approximately twelve major trades and the remainder are minor trades. Course outlines have been prepared for every trade that is included in the Area. The work in preparing course outlines is complicated in that the Area serves area vocational centers and technical institutes in both co-operative programs and day- trade programs.

Every shop teacher has a state adopted course outline in his possession. The course outlines were developed by shop instructors and curriculum specialists. Many instructors utilize commercial textbooks with accompanying workbooks for pupils, if there are textbooks available in the vocational area.

All curricula are presently under revision. One attempt at curriculum revision has featured curriculum developers interviewing incumbent workers and employees, developing task lists, and then developing curricula based upon performance objectives and criterion-referenced measures.

Instruction in a Trade and Industrial Education cooperative program must be on an individual basis. A single cooperative education class may have students from twenty-five different occupations. Individual student study guides have been developed for forty-nine different occupations. Each student study guide consists of a task analysis, a bibliography, a progress chart, and an assignment sheet for each task in the analysis. An answer book for the assignments, objective tests and test answer books have been prepared for the coordinator's use.

The Service Area is vitally interested in the V-TECS, DELTA Project because the task statements, the performance objectives, and the criterion-referenced measures will contribute to the development of curriculum materials.

CAREER GUIDANCE AND INDUSTRIAL ARTS

This Service Area is relatively new, combining two areas into a single entity. Industrial Arts was not included in the 1917 Smith Hughes Act, and has not had the financial assistance of other service areas in defining a body of knowledge. However, recent efforts have brought the State-of-the-Art nearer to consensus on the body of knowledge. Trott[107] describes the development of curricula in Alabama.

> While it may be true in that a national consensus has not been reached as to what should be taught in an industrial arts program, many authorities have identified goals and objectives of industrial arts that have been generally accepted. It has been pointed up by many that the lack of any funding scheme prior to the NDEA has hampered the development of industrial arts. The identification of the fifteen occupational clusters by the USOE, the Ohio State Industrial Arts Curriculum Project, the American Industry Project, Stout, and numerous less publicized efforts have done much to identify roles and content for industrial arts in a rapidly changing school curriculum. Further focus on roles for industrial arts has resulted from the 1972 amendments to the Vocational Education Act.
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> An EPDA Workshop in Leadership Development through Industrial Arts Curriculum Revision was conducted by the Alabama State Department of Education, Division of Vocational Education and Community Colleges and the Department of Vocational and Adult Education at Auburn University at Auburn, June 14-July 3, 1974. The project was a direct follow-up to the statewide Work Conference on Career Guidance held in Birmingham, August 13-17, 1973. The objectives of the workshop were:
>
> 1. To develop a structure for a comprehensive series of career oriented industrial arts programs covering grades K-12.
> 2. To develop suggested methods and activities for integrating career guidance and industrial arts.
> 3. To prepare a number of industrial arts teachers to assume leadership roles in implementing career oriented industrial arts programs.

In terms of curriculum materials available in industrial arts, the following titles are available for the following levels:

K-6 -*Industrial Arts Activities for Grades K-6*

MIDDLE GRADES -*Exploration-Orientation*
- Exploring American Industry
- Manufacturing
- Construction
- Graphic Communications
- Power and Transportation

UPPER GRADES - *Pre-Specialized/Exploration*
American Industry
Industrial Materials and Processes
Drafting (I,II)
Graphic Arts (I,II)
Power Transportation (I,II)
Electricity-Electronics (I,II)

These guides are being revised and readied for printing. They are not intended to be "cook-books", but simply to provide the framework for developing a quality program of industrial arts.

The participants in the workshop felt that industrial arts should continue to be developed as a unique service area as opposed to a methodology for instruction as has been advocated by some contemporary approaches to industrial arts.

The second function of the service area is career guidance. At the present time, there are approximately one-hundred reimbursable Career Guidance and Placement Specialists (Vocational Counselors) in Alabama. These Career Guidance and Placement Specialists have been provided with the responsibility for implementing the Career Education concept in elementary, middle school, and in secondary schools. The Area is preparing a handbook for these specialists. The State-of-the-Art produced three efforts which were judged to be significant in terms of their content and effort relating to the role of the Career Guidance and Placement Specialist. As part of the Washington certification program, a pilot program for Counselor certification was initiated in the Bellvue Public School Program. The experimental program is field testing the competencies for counselors. The Mesa Public Schools has a program entitled, *Toward Accountability: A Report on the Mesa Approach to Career Guidance, Counseling, and Placement.* The program is performance based. The third publication is a book, *Career Information in Counseling and Teaching,* Lee E.Isaacson. Regretfully, the computer search did not produce further materials relating to the concept of "the role of the counselor" in relation to "instructional systems approach," "PBTE", or "Accountability" Evidently this is the "cutting edge" of the technology.

TECHNICAL INSTITUTES AND COLLEGES

The State-of-the-Art in the technical colleges has produced curriculum materials in 95% of the areas taught in the technical institutes. The curricula are stated in behavioral objectives, were developed by the instructors, and have produced a product that is workable. The courses of study have resulted in reduced time in the preparation of personnel in each area and have produced packages with which administration can establish a system of accountability for pupils and instruction.

The State Director of Technical Colleges and Institutes has also worked with the U.S.O.E. members (Adolf Panitz and Thomas C. Olivo) with a grant to develop a competency examination for T & I instructors for content to be taught. This effort (cited earlier in this report) is the first national effort to develop certification based upon competency. Twenty-four areas have been developed in conjunction with the Educational Testing Service. The Area has invested $3500 for 54 tests, and is accepting requests by instructors for the examination. The testing site will be in Bessemer at the Institute and the test will test both theory and competence in the occupation.

Implications of the State-of-the-Art

On the basis of the review of research, curriculum materials, etc., relating to curriculum development, the following implications would seem to be indicated:

1. Systems analysis approaches applied to education have altered curriculum theory and are producing curricula that will result in:
   1.1 Instructional systems approaches to vocational and to academic education at all levels, i.e., elementary, secondary, post-secondary, and higher education.
   1.2 Performance Based Teacher Education Programs being developed and implemented in the State of Alabama.
   1.3 Revised certification standards in Alabama, developed and probably centered in the "approved program concept."
2. The instructional systems approach to education will result in the development of a system of educational accountability for the State of Alabama.
3. Comprehensive placement plans for students will be developed for all educational programs at all levels in the State of Alabama.
4. The role of the Division of Vocational Education and Community Colleges will be studied in terms of the function of instructional systems and measures initiated for State Staff relative to those functions. This will require greater emphasis on education. The State Department will exert leadership in both of these areas.
5. In-service education will be initiated at all levels of education for instructional systems approaches. The in-service programs will involve teachers, administrators, support personnel, teacher educators, and all other educational personnel in the state.
6. Educational Accountability will require educational planning for all institutions of higher education.
7. The review of the literature seems to indicate that the role of The Division of Vocational Education and Community Colleges in curriculum development and utilization includes:
   7.1 Conducting task analyses
   7.2 Conducting needs analyses
   7.3 Developing performance objectives
   7.4 Developing criterion-referenced measures
   7.5 Assuming leadership for curriculum development in vocational education including articulation of instructional programs at the secondary, post- secondary and adult levels.

7.6 Assisting in the development of learning materials and learning experiences
7.7 Conducting research to evaluate the system
7.8 Providing feedback to participants in the system
7.9 Supervising the instructional system
7.10 Disseminating research to the field and conducting intensive in-service educational programs for all educational personnel.

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